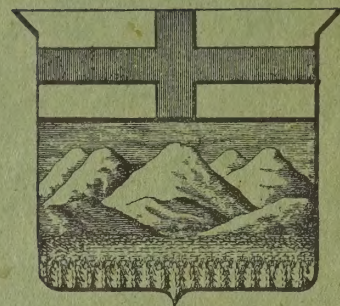


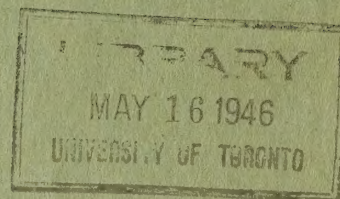
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PROVINCE OF ALBERTA
HON. E. C. MANNING
Premier



SUBMISSION on the
COAL RESOURCES and
COAL INDUSTRY of ALBERTA



[*And Supplementary* and
information].

2 vols. in 1.

Their Relation to those
of Canada as prepared
for the . . .

(Royal Commission)
(on the)
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Edmonton,
April 15, 1945.

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Canada. Coal, Royal Commission on



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DEPARTMENT OF LANDS AND MINES
ALBERTA
OFFICE OF THE MINISTER

Edmonton, April 16, 1945

The Royal Commission on the
Coal Industry in Canada.

Gentlemen:

Just a year ago tomorrow, the Alberta Coal Committee presented a Brief to the Dominion Government setting out in a concise manner the problems affecting the coal industry, a copy of which has been presented to your Commission.

The Committee preparing this Brief was made up of representatives of the industry, the miners and the Provincial Government. This was the first time that such united action has ever been taken in the interests of the industry, and was evidence of the importance placed on it by all concerned.


At the time our Brief was being prepared, we were advised that a Royal Commission would be set up to consider all matters pertaining to the coal industry. We welcomed this information, and are pleased that the Commission has been set up as now constituted.

We appreciate this opportunity of presenting the views of the Alberta Government to your Commission, and we wish to assure you of our closest co-operation and assistance wherever possible.

Yours respectfully,

A handwritten signature in cursive script, reading "N.E. Tanner".

N.E. Tanner,
Minister.



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ALBERTA



COAL

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ALBERTA



COAL

SECTION A
GENERAL THESIS

GENERAL THESIS

The general thesis of this brief is as follows:-

That a prosperous coal industry in Alberta is essential for a prosperous Alberta.

That a prosperous coal industry in Canada, and a prosperous Alberta, are essential for a prosperous Canada.

That the welfare of the Alberta coal industry and of the Canadian coal industry are so interrelated as to be essentially the same problem.

That Alberta has proven deposits of mineable coal ample to supply for hundreds of years all requirements for Canada of coal for domestic, industrial and railway use, as well as of coal to replace gas and oil as these resources become depleted, and of coal as raw material for new chemical industries.

That Canada has coal deposits in Nova Scotia, New Brunswick, Ontario, Saskatchewan and British Columbia, as well as in Alberta, and yet in normal times imports more than half its consumption of coal.

That the dominant problem in the supply of Canadian coal for Canadian needs is the long distances, and consequent excessive freight rates, separating the coal fields from the main areas of coal consumption. This handicap is particularly applicable to Alberta coal.

That types and qualities of Canadian coal are not major factors in the situation. Not only are many coals available, satisfactory as mined to suit most requirements; but technical processes are available, although some only in the development stage, to upgrade low rank coal, to convert one type of coal into another, to convert coal into gas and oil, and, in general, to supply all markets from available coals.

That the coal industry of Canada requires organization.

That organization of the industry, by eliminating cut-throat competition, overlapping activities and needless duplication of equipment, by regulation of sales and of markets, and by general systemization, will reduce the cost of coal and thus increase the area of accessible markets for each coal field.

That, in addition to the economies due to organization, reduced and stabilized freight rates, and long term subventions, will be necessary to the achievement of the supply of Canadian needs by Canadian coals.

That further geological surveys should be made, and that a far wider and more aggressive programme of investigation and research should be initiated.

That standardization of coal by size and quality is desirable, and, that a consistent programme of education for coal miners and coal operators should be arranged.



SECTION B

HISTORY OF ALBERTA COAL

Although Alexander Mackenzie first discovered large deposits of coal on the lower Mackenzie River in 1789 and Edward Umfreville discovered a "float" on the Saskatchewan River eastward from the Alberta boundary in 1786, to Peter Fidler must go the credit for finding the first coal deposits in the territory now known as The Province of Alberta. Fidler discovered coal in the Drumheller district on Rosebud Creek in 1791.

Alexander Mackenzie discovered large deposits of coal in the Peace River Block in May 1793 and, according to Dr. J.A. Allan, this was the first mention of anthracite in this territory. Mackenzie's notes indicate that he was highly impressed with the tremendous size of the deposits which he discovered, particularly in the lower Mackenzie River district where he found that the whole river bank was on fire for a considerable distance.

David Thompson was the first explorer to record the occurrence of coal in the Edmonton district in 1800 and the Saunders Creek deposits were reported first in 1810 by Alexander Henry Jr.

Sir George Simpson who first recorded the presence of gold in Alberta, discussed at some length the coal of the Edmonton district and, stating in 1841 that it was being used by blacksmiths, reported that it was as good as any other blacksmith coal obtained from mines either in eastern Canada or in the United States.

A general statement covering discoveries in the foothill regions of Alberta indicates that coal was first located, possibly in the Canmore-Bankhead district, in 1845.

Sir James Hector, travelling with the Palliser expedition reported on coal seams on the Athabaska and Pembina Rivers. The location of these discoveries coincide pretty well with the site of the present mines operating in these localities.

Dr. George M. Dawson, came to the west in 1865 to make the first exploration along the international boundary line. He reported in that year that great coal seams existed in the treeless areas and published a map which had considerable influence in effecting a change in the general sentiment of eastern Canada toward the western prairies.

Nicholas Sheran opened the first coal-mine in Alberta on the banks of the Old Man River near Lethbridge in 1872 and hauled coal from there to Fort Benton, Montana by ox train for a number of years.

Northern Alberta was explored in 1885 and 1886 by J.B. Tyrrell. This exploration included the Edmonton district and resulted in the marking of a number of coal seams which he discovered along the rivers.

During the construction of the Canadian Pacific Railway in the vicinity of the Rocky Mountains, coal was being hauled from the United States. In 1881 the first coal seam was opened in the Lethbridge district, the product from this particular mine being hauled to Medicine Hat. It was used in locomotives and found to be so satisfactory that a narrow gauge railway was built to Lethbridge and a mine opened in that area.

The next year, 1882, and also in 1883, coal mines were opened at Anthracite and Canmore. The product of these mines was used in the heavy construction work of the railway through the mountains. It has been stated that if the prairie and foothills of Alberta had not been successful in supplying considerable coal for locomotives that much of the railway construction work in the mountains would have been delayed considerably. The Crowsnest mines were opened about 1898.

Following these events, and as a result of the importance attached to Alberta's coal reserves, a certain amount of detail work was carried out by the Federal Geological Survey. Stratigraphical information was obtained throughout Alberta as a result, and the distribution of many coal bearing formations was marked as accurately as the geological knowledge of that time would warrant.

Development of the coal producing areas on the railway from Bickerdike to Cadomin, Luscar, Mountain Park and Sterco followed the construction of the former Grand Trunk Pacific line into the Yellowhead Pass in 1911 and 1912 and extended over a number of years. The Nordegg field was opened with the construction of the former Canadian Northern line about 1913.

The first experimental shipment of Alberta coal to Ontario was made in 1923 and was followed by others in 1925 and 1926, the three shipments having been made in arrangement with Hon. Howard Ferguson, then premier of Ontario. No subventions were paid on these shipments and freight rates were charged on an experimental basis without prejudice and only for a specific tonnage.

The following portions of this brief deal explicitly with conditions and circumstances in the coal mining industry of Alberta since that time.

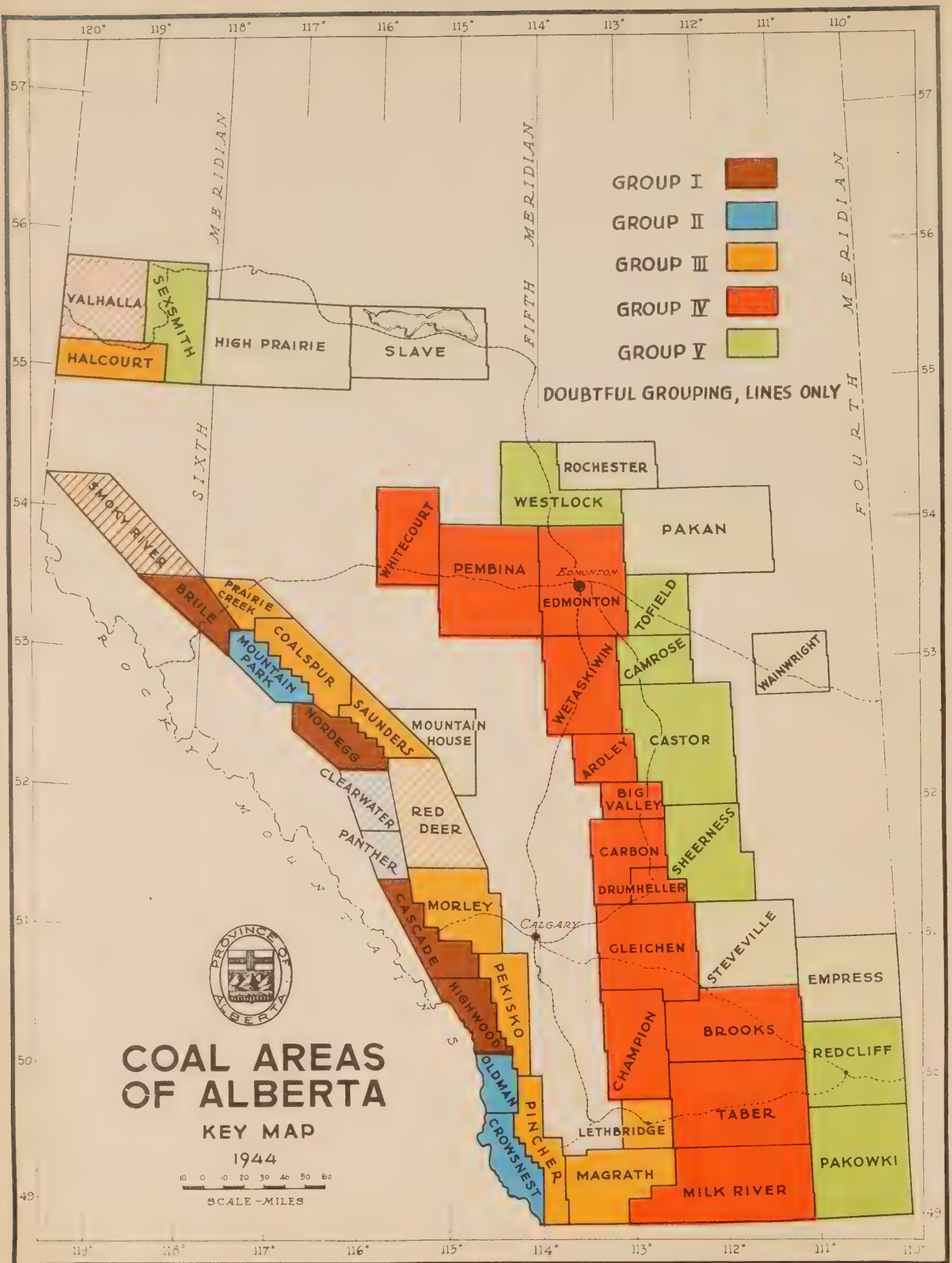
ALBERTA



COAL

SECTION C

COAL CLASSIFICATION



Classification of Alberta Coals

Exact classification of coal in Canada may be said to date from the publication in 1939 of Report No. 814 of the National Research Council. The classification then promulgated was that of the American Society for Testing Materials - Specification D388-38.

An earlier classification, without any defined boundaries, existed in Alberta and is still in common use. It is also used in the statistics given in the Annual reports of the Provincial Mines Branch.

For the purposes of the present brief, however, it has been thought better to divide the coals of Alberta into five broad groups, each containing coals of the same general character and used for the same purposes, as shown in Report 35 of the Research Council of Alberta, on pages 19 and 20. The following table gives all three methods of subdivision and indicates the extent to which they agree, disagree and overlap.

Classification and Grouping of Alberta Coals

Alberta classification of Common Usage and of Mines Branch Statistics	Canadian Classification A.S.T.M. D 388-38	Five Group Division Used in this brief.
	Class	
Anthracite *	Anthracitic (1) Meta-anthracite	Group I
	(2) Anthracite	
	(3) Semi-anthracite	
Bituminous	Bituminous (1) Low volatile bituminous coal	Group II
	(2) Medium " " "	
	(3) High volatile A " "	
Subbituminous	(4) " " B " "	Group III
	(5) " " C " "	
Domestic	Subbituminous (1) Subbituminous A Coal	Group IV
	(2) " B "	
	(3) " C "	
	Lignite (1) Lignite * *	Group V
	(2) Brown coal	

* Anthracite now included with bituminous coal in Provincial statistics.

* * The lignite mined in the Province is trivial in amount.

Group IV is basically Subbituminous A and B, and Group V subbituminous C, but as all coal from any area is assumed to be of the group of the bulk of coal mined in the area, this in some cases causes overlapping. Thus coal from an area where most of the coal mined is subbituminous B is called Group IV but some subbituminous C may also be mined in that area.

Five Groups - Characteristics and Analyses

Group I. Low volatile, non-coking coal from mountain areas. Commonly called steam coal.

A good storage, weather resistant coal. Burns with a short, slightly smoky flame. Used for railways and for steam raising in general. This coal, when briquetted, is also used for domestic heating.

Important areas where this coal is mined are: Cascade, Highwood, Nordegg.

Group II. High volatile, coking bituminous coal from mountain areas. Also commonly called steam coal.

A good storage, weather resistant coal. Burns with a medium to long, smoky flame. Used for railways and for steam raising in general. Also used for making coke, as smithy coal, and in the cement industry.

Important areas of this group are: Crowsnest and Mountain Park.

Group III. High volatile, non-coking coal, principally from foothills areas.

A good storage, weather resistant coal. It is a free-burning, non-coking coal that burns with a long, slightly smoky flame. Used for domestic and for steam raising purposes. It is a strong coal and can be shipped and stored reasonably well.

Important areas of this group are: Coalspur, Lethbridge, Prairie Creek, Saunders.

Group IV. A so-called domestic coal, fair storage, from prairie areas.

Can be stored, with care, under cover. It is a free-burning, non-coking coal, that ignites easily and burns with a long, smokeless flame. Used for domestic heating and also for steam raising. It can be shipped in box cars.

Important areas of this group are: Carbon, Drumheller, Edmonton, Pembina, Taber.

Group V. A so-called domestic coal, poor storage, from prairie areas.

Will not store well. It is a free-burning, non-coking coal, that ignites easily and burns with a long smokeless flame. Used for domestic heating and also for steam raising. It can be shipped in box cars.

Important areas of this group are: Camrose, Castor, Sheerness, Tofield.

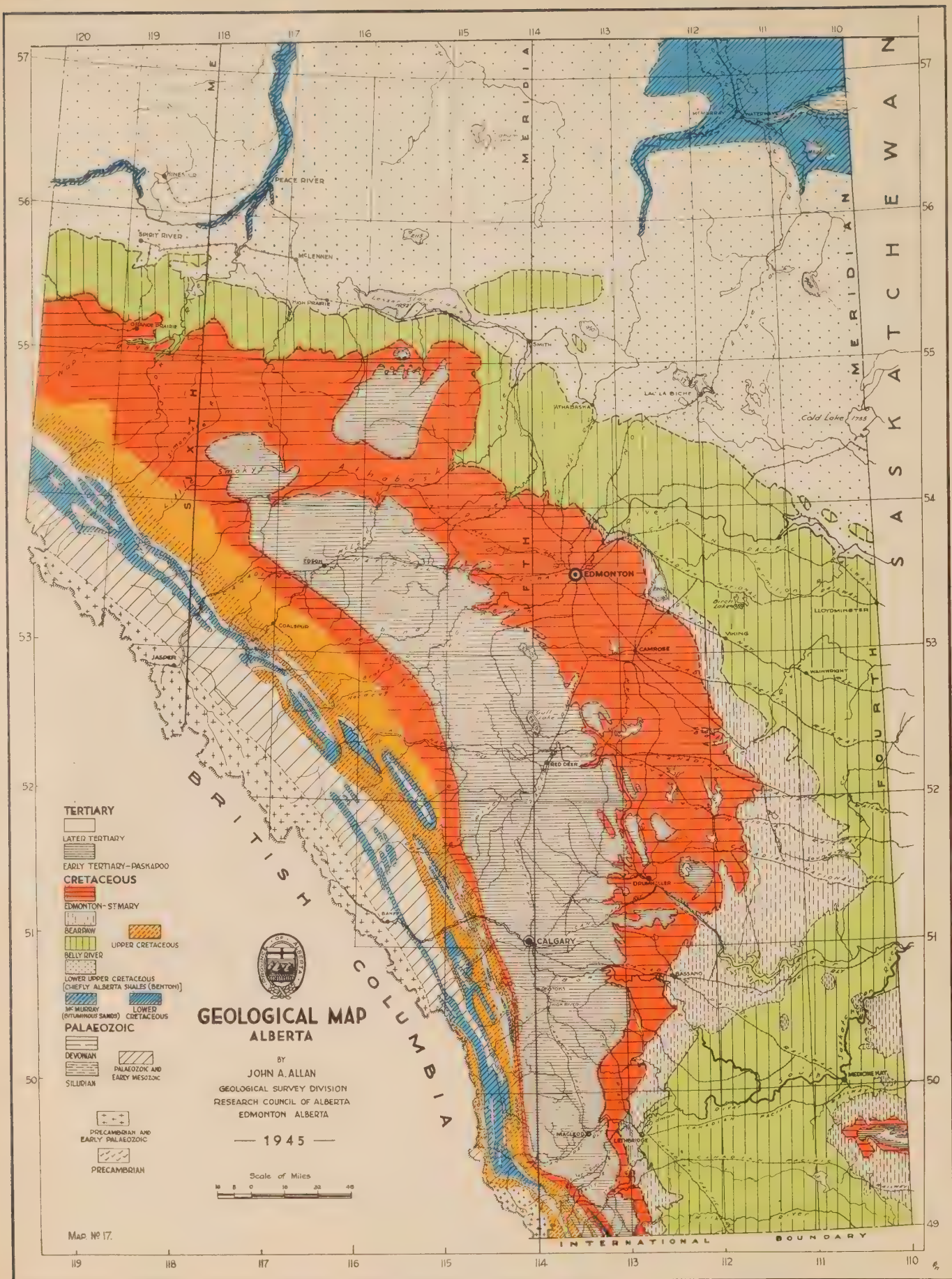
An analysis is given in the following table for each group, but it must be understood that as there is a wide range of coals in each group the analysis given for any group is merely typical and may be far from representative of some coals in the group.

The output for the group in 1943 is also given.

		Group I	Group II	Group III	Group IV	Group V
Moisture	%	1 1/2	1 1/2	10	19	27
Ash	%	8 1/2	12 1/2	10	7	7
Volatile Matter	%	15	25	34	30	28
Fixed Carbon	%	75	61	46	44	38
Heat value,	B.t.u./lb.	14,000	13,200	10,900	9,700	8,300
Output in 1943,	thousand tons	996	2,486	1,359	2,533	304



SECTION D
COAL RESERVES



COAL RESERVES

Coal seams in Alberta have a wide distribution in the Cretaceous formations as shown on the geological map (Plate 2). The coal-bearing beds in Alberta occur in three different horizons. The oldest horizon in the Blairmore-Kootenay formation is Lower Cretaceous in age. The two younger horizons are of Upper Cretaceous age and occur in the Belly River and Edmonton formations. The oldest and most mature coal seams outcrop within the front ranges of the Rocky Mountains and are presently mined at a number of places in the Crowsnest Pass and at Canmore, Nordegg, Mountain Park, Cadomin and Luscar, and more recently are being developed in the Highwood and Sheep Creek valleys. The coal seams in the Belly River and Edmonton horizons outcrop in or occur under the foothills and plains. The coal seams under the plains are flat-lying or dip at less than five degrees. In the foothills belt the dips increase but are seldom over 20 degrees. Much steeper dips occur in the coal seams within the mountains, and in some places the seams have dips of 90 degrees.

The geology of the coal deposits of Alberta has been discussed in various reports issued by the Research Council of Alberta and by the Geological Survey of Canada. Details on the coal areas are summarized by J.A. Allan in Report 34, Part V, issued by the Research Council of Alberta in 1943, so it will not be necessary to discuss the geology of the coal deposits, except certain geological factors which affect coal production or are related to an estimation of the available coal reserves of Alberta.

Coal is being mined at a number of centres in the plains, foothills and mountains in the southern half of Alberta where the coal seams outcrop or where the coal deposits are more accessible to present transportation facilities. Of course the coal-bearing formations have a much wider distribution that is represented by the present coal mining development. This is an important factor in estimating the coal reserves available for development. There are several areas of considerable extent where the general geology has not been sufficiently interpreted to say that there is or is not mineable coal in those areas.

When the Research Council of Alberta was organized in 1920, it was apparent that a map was needed outlining coal areas based on geological formations. Such a map was needed for the classification of coals according to chemical analyses, and also for the marketing of coal where it is advisable to indicate the district from which the coal has been mined. The latest coal areas map, published in 1943, shows 50 coal areas, including 72,435 square miles, where coal has been mined or where mineable coal is known to occur. The position of these coal areas is shown on Plate 1. The rank of coal in each area is designated by color to represent the five groups into which Alberta coals are classified.

The two chief factors that determine the rank of the coal are age and pressure. In general it is a fact that the older coals are more mature or "harder" than the younger coals. In Alberta, the Blairmore-Kootenay coals of Lower Cretaceous age are more mature than most of the Belly River or Edmonton coals that are of Upper Cretaceous age. On the other hand, pressure will mature a coal more rapidly. That is why the rank of most Alberta coals increases from east to west, that is, from the plains to the foothills and mountains. For example, a Belly River coal at Wainwright is less mature than a Belly River coal in the foothills area. This explains why the Lethbridge coal is of higher rank than the Redcliff coal, although the coal seams in the two areas are of the same age. The coal seams in the Lethbridge area are closer to the mountains and have been affected to a greater degree by the mountain-building forces, than have the coal seams in the Redcliff area.

The amount of coal, and the thickness and mineability of coal seams within a given area of coal-bearing formation, cannot be determined with any degree of accuracy until the thickness and extent of the coal seams have been proven by test drilling or by actual mining operations. It is therefore only possible to estimate the amount of mineable coal in a given area, from the geological facts obtained from outcrops of coal seams or from coal mines, or from holes drilled at various points in the coal-bearing formation.

It is necessary to understand that coal seams seldom extend laterally for any great distance. Geological investigations indicate that any coal seam in the Cretaceous formations in Alberta, will vary in thickness and change in quality of coal within a short distance, often within less than one mile. It is also reasonable to assume that there is mineable coal, underlying many areas that have not yet been opened by mining. Coal seams have been encountered when drilling for oil and natural gas, where there is no outcrop of coal in the vicinity or where the coal seam drilled through is below the horizons in the adjoining outcrops in valleys or ridges. All such geological factors have been considered in estimating the coal reserves.

A clear distinction must be made between coal resources and coal reserves available for development by present mining methods. Coal resources include all known coal deposits based on the extent of coal-bearing formations, but it must be evident that a large percentage of the coal occurs in seams that are not mineable. Any estimate of the coal resources will be much larger than an estimate of the amount of coal that can be classed as mineable. An estimate of the coal reserves, on the other hand, will represent the quantity of coal that may be mineable at present or at some future date, based on the thickness and quality of the coal in the seams in the outcrop or in the mine, or in the bore hole, and also on the geological factors obtainable on the coal-bearing formations. This is the basis on which the estimate of Alberta coal reserves has been made. This estimate of reserves must be considerably smaller than that given for coal resources.

The first complete study of the coal resources of Alberta, based on several years of field investigations by D.B. Dowling, was that made by the Geological Survey of Canada for the International Geological Congress held in Canada in 1913, and the results were published in the Coal Resources of the World, 1912. The estimate on the coal resources of the world made at that date was arbitrarily based on the extent of the coal-bearing formations and included all known coal seams one foot or over in thickness, to a vertical depth of 4000 feet. On this arbitrary basis the total coal resources of Alberta has been given at over one million million long tons of mineable coal.

In the past thirty years more extensive geological investigations and mining and drilling operations have increased the geological knowledge of the extent, thickness and quality of the coal seams in the Cretaceous strata in Alberta.

In 1925, Dr. J.A. Allan, on behalf of the Research Council of Alberta, made an estimate of the actual and probable coal reserves in each of the coal areas, on the basis of coal seams over two feet in thickness to a depth of 1,000 feet. This estimate submitted to the Evans Coal Commission was about 57,000 million short tons. In 1935, before the Barlow Royal Commission, the estimate of coal reserves based on seams three feet or over in thickness under 1,717 square miles, was approximately 40,200 million tons.

In the past ten years the knowledge of the thickness, extent and character of the coal seams in each of the coal-bearing formations has greatly increased.

The present estimate of the coal reserves of Alberta is shown in Tables I and II.

Table 1.
ESTIMATED ALBERTA COAL RESERVES
 Based on Geological and Mining Data,
 Arranged according to Geological Age,
 Shown on Plate 3,
 February 1945.

Formation	No.	Name of Area	Total Area sq.mi.	Area underlain by coal, sq. mi.	Thickness of coal, feet	Tons acre foot	Tonnage, millions of tons	Totals
<u>Kootenay Formation</u>								
	K1	Smoky River	1,490	55	50	1,860	3,300	
	K2	Brule	715	36	23	1,860	1,000	
	K3	Mountain Park	690	108	40	1,875	5,200	
	K4	Nordegg	835	46	27	1,840	1,500	
	K5	Clearwater	645	18	25	1,860	500	
	K6	Panther	410	11	25	1,860	300	
	K7	Cascade	870	100	32	1,880	3,900	
	K8	Highwood	745	90	60	1,860	6,400	
	K9	Oldman	515	72	30	1,800	2,500	
	K10	Crowsnest	840	140	30	1,900	5,100	
								Total - 29,700 million tons
<u>Belly River (including Edmonton)</u>								
	B1	Halcourt	970	72	3	1,800	300	
	B2	Prairie Creek	565	25	15	1,820	400	
	B3	Coalspur	1,125	100	30	1,900	3,600	
	B4	Saunders	745	72	20	1,840	1,700	
	B5	Morley	1,480	80	10	1,800	900	
	B6	Pekisko	945	75	15	1,820	1,300	
	B7	Pincher	955	36	7	1,860	300	
	B20	Sexsmith	1,570	2	5	1,800	10	
	B21	Valhalla	1,765	5	5	1,800	30	
	B22	Red Deer	1,625	20	20	1,820	500	
	B23	Westlock	1,705	5	6	1,800	40	
								Total - 9,080 million tons
<u>Belly River</u>								
	B8	Magrath	1,550	72	6	1,870	500	
	B9	Lethbridge	575	150	4	1,860	700	
	B10	Milk River	2,735	80	6	1,850	600	
	B11	Pakowki	2,590	41	6	1,800	300	
	B12	Taber	2,770	80	3	1,860	300	
	B13	Redcliff	2,015	1	4	1,780	5	
	B14	Brooks	2,270	30	4	1,780	100	
	B15	Steveville	2,015	3	3	1,780	10	
	B16	Empress	2,015	1	3	1,780	3	
	B17	Wainwright	1,080	2	5	1,780	10	
	B18	Pakan	3,025	2	5	1,780	10	
	B19	Rochester	1,150	1	6	1,800	7	
	B24	Slave	2,375	2	4	1,800	9	
	B25	High Prairie	3,020	2	4	1,800	9	
								Total - 2,563 million tons

Table 1 (continued).

ESTIMATED ALBERTA COAL RESERVES
Based on Geological and Mining Data,
Arranged according to Geological Age,
Shown on Plate 3,
February 1945.

Formation No.	Name of Area	Total Area sq. mi.	Area un- derlain by coal, sq. mi.	Thick- ness of coal, feet	Tons acre foot	Tonnage, millions of tons	Totals
<u>Edmonton Formation</u>							
E1	Pembina	2,630	50	25	1,870	1,500	
E2	Edmonton	2,270	50	12	1,790	700	
E3	Tofield	900	20	15	1,760	300	
E4	Camrose	865	10	10	1,760	100	
E5	Castor	2,880	20	15	1,770	300	
E6	Ardley	720	20	10	1,820	200	
E7	Big Valley	540	7	6	1,860	50	
E8	Carbon	1,190	25	10	1,850	300	
E9	Sheerness	1,765	20	10	1,800	200	
E10	Drumheller	430	75	15	1,820	1,300	
E11	Gleichen	2,125	10	5	1,780	60	
E12	Champion	1,620	10	5	1,850	60	
E13	Wetaskiwin	1,730	10	6	1,780	70	
E14	Whitecourt	1,440	10	6	1,850	70	
E15	Mountain House	940	2	4	1,800	9	
						Total - 5,219 million tons	
<hr/>							
* Grand Total		72,435	1,974			46,562 million tons	

* Estimated area underlain by workable coal represents 2.7 percent of the total area shown in Coal Areas as mapped.

Table II - next page.

Table II.
ESTIMATED ALBERTA COAL RESERVES
 Based on Geological and Mining Data,
 Arranged according to Groups,
 Shown on Plates 4 and 5,
 February 1945.

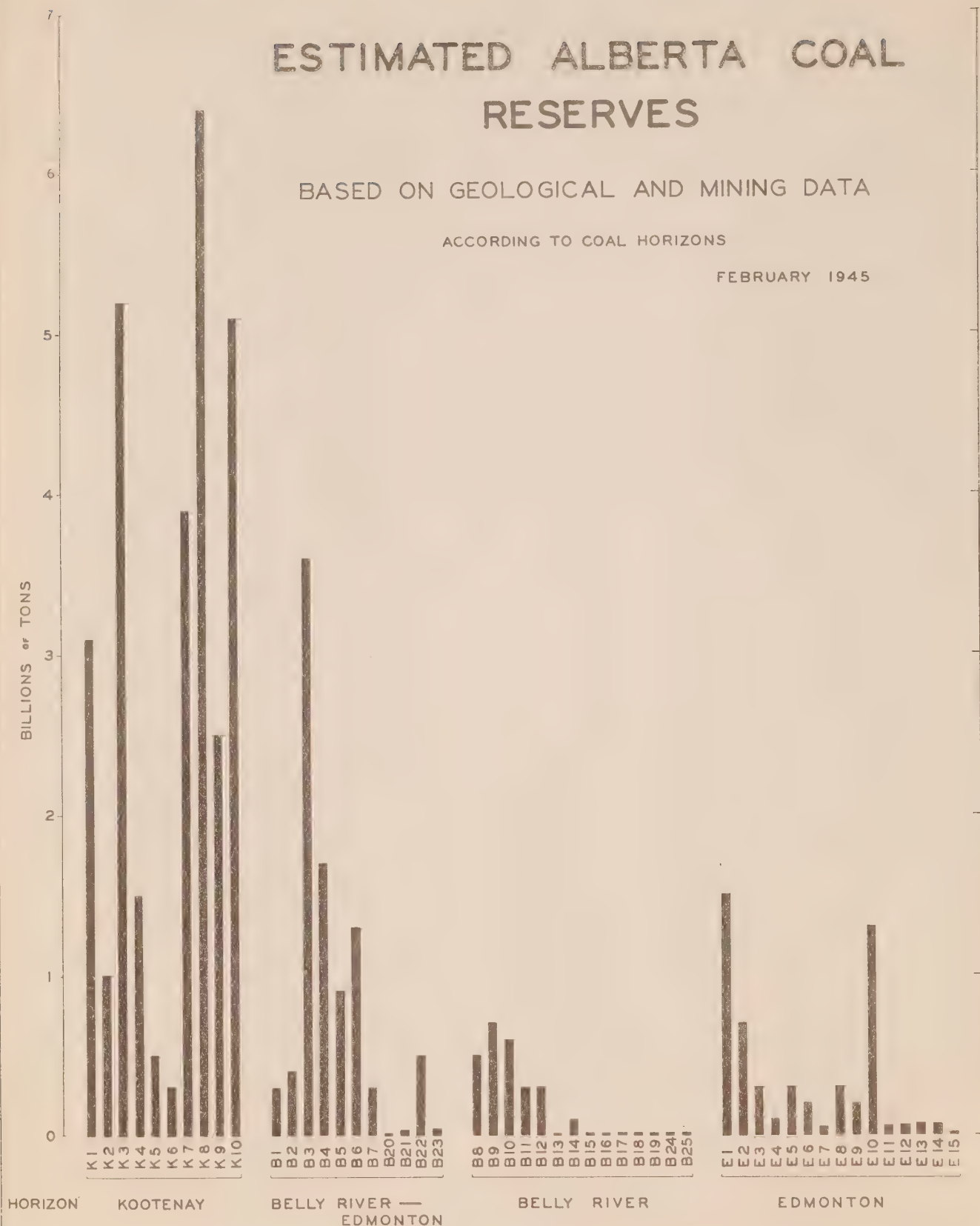
Formation No.	Name of Area	Total Area sq. mi.	Area un- derlain by coal sq. mi.	Thick- ness of coal feet	Tons acre foot	Tonnage, millions of tons	Totals
<u>Group I.</u>							
K1	Smoky River	1,490	55	50	1,860	3,300	
K2	Brule	715	36	23	1,860	1,000	
K4	Nordeg	840	46	27	1,840	1,500	
K7	Cascade	870	100	32	1,880	3,900	
K8	Highwood	745	90	60	1,860	6,400	
						Total - 16,100 millions tons	
<u>Group II.</u>							
K3	Mountain Park	690	108	40	1,875	5,200	
K5	Clearwater	645	18	25	1,860	500	
K6	Panther	410	11	25	1,860	300	
K9	Oldman	515	72	30	1,800	2,500	
K10	Crowsnest	840	140	30	1,900	5,100	
						Total - 13,600 million tons	
<u>Group III.</u>							
B1	Halcourt	970	72	3	1,800	300	
B2	Prairie Creek	565	25	15	1,820	400	
B3	Coalspur	1,125	100	30	1,900	3,600	
B4	Saunders	745	72	20	1,840	1,700	
B5	Morley	1,480	80	10	1,800	900	
B6	Pekisko	945	75	15	1,820	1,300	
B7	Pincher	955	36	7	1,860	300	
B8	Magrath	1,550	72	6	1,870	500	
B9	Lethbridge	575	150	4	1,860	700	
B22	Red Deer	1,625	20	20	1,820	500	
						Total - 10,200 million tons	
<u>Group IV.</u>							
B10	Milk River	2,735	80	6	1,850	600	
B12	Taber	2,770	80	3	1,860	300	
B14	Brooks	2,270	30	4	1,780	100	
B21	Valhalla	1,765	5	5	1,800	30	
E1	Pembina	2,630	50	25	1,870	1,500	
E2	Edmonton	2,270	50	12	1,790	700	
E6	Ardley	720	20	10	1,820	200	
E7	Big Valley	540	7	6	1,860	50	
E8	Carbon	1,190	25	10	1,850	300	
E10	Drumheller	430	75	15	1,820	1,300	
E11	Gleichen	2,125	10	5	1,780	60	
E12	Champion	1,620	10	5	1,850	60	
E13	Wetaskiwin	1,730	10	6	1,780	70	
E14	Whitecourt	1,440	10	6	1,850	70	
						Total - 5,340 million tons	

ESTIMATED ALBERTA COAL RESERVES

BASED ON GEOLOGICAL AND MINING DATA

ACCORDING TO COAL HORIZONS

FEBRUARY 1945



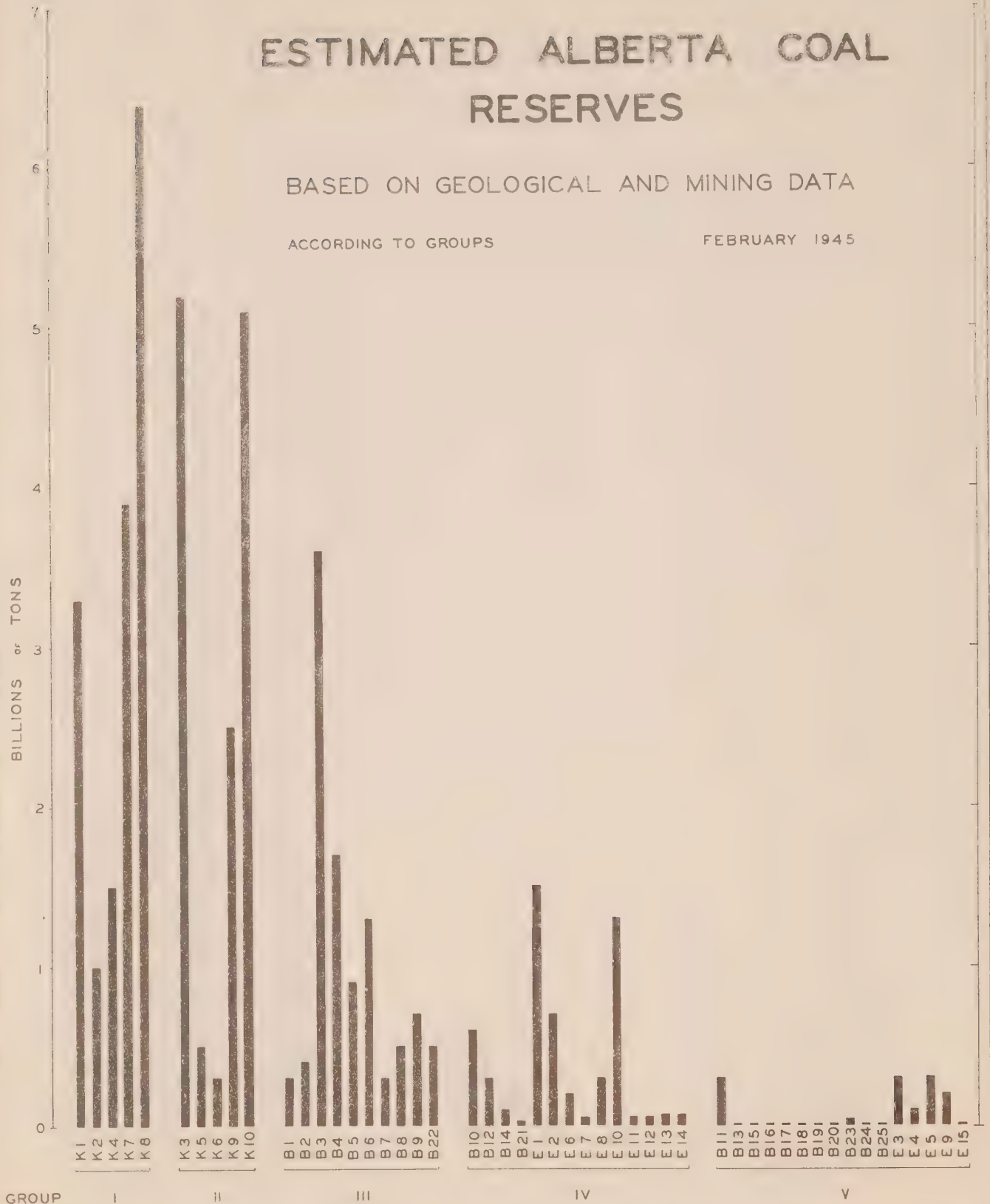
J. A. ALLAN, RESEARCH COUNCIL OF ALBERTA

ESTIMATED ALBERTA COAL RESERVES

BASED ON GEOLOGICAL AND MINING DATA

ACCORDING TO GROUPS

FEBRUARY 1945



J. A. ALLAN, RESEARCH COUNCIL OF ALBERTA



PLATE 5

AVAILABLE COAL BY GROUPS
SHORT TONS

Table II Continued

ESTIMATED ALBERTA COAL RESERVES
Based on Geological and Mining Data,
Arranged according to Groups,
Shown on Plates 4 and 5,
February 1945.

Formation No.	Name of Area	Total Area sq. mi.	Area un- derlain by coal, sq. mi.	Thick- ness of coal feet	Tons acre foot	Tonnage, millions of tons	Totals
<u>Group V.</u>							
B11	Pakowki	2,590	41	6	1,800	300	
B13	Redcliff	2,015	1	4	1,780	5	
B15	Steveville	2,015	3	3	1,780	10	
B16	Empress	2,015	1	3	1,780	3	
B17	Wainwright	1,080	2	5	1,780	10	
B18	Pakan	3,025	2	5	1,780	10	
B19	Rochester	1,150	1	6	1,800	7	
B20	Sexsmith	1,570	2	5	1,800	10	
B23	Westlock	1,705	5	6	1,800	40	
B24	Slave	2,375	2	4	1,800	9	
B25	High Prairie	3,020	2	4	1,800	9	
E3	Tofield	900	20	15	1,760	300	
E4	Camrose	865	10	10	1,760	100	
E5	Castor	2,880	20	15	1,770	300	
E9	Sheerness	1,765	20	10	1,800	200	
E15	Mountain House	940	2	4	1,800	9	
						Total - 1,322 million tons	
						Grand Total - 46,562 million tons	

These tabulations are also shown graphically on Plates 3, 4 and 5. The estimate is based on known coal seams three feet or over in thickness, occurring within 1,000 feet of the surface and most of the coal is within 500 feet of the surface. Only that coal under each of the coal areas shown on Plate 1 has been included, most of which is available for immediate production. No doubt there is considerable mineable coal in some small areas not included in the present coal areas, but this coal would not change appreciably the figure given for the available reserves. The known available coal in reserve in 1,974 square miles within the coal areas of Alberta on the basis stated above and shown on Tables I and II, is over forty-six thousand million short tons.

Mining practice has been such that a great tonnage of coal has been left in pillars or abandoned on account of quality or inaccessibility. This tonnage has been lost for future use. Considerable quantities of accessible coal have been lost by the abandonment of mines.

The total production of coal mined in Alberta between 1886 and 1944 was approximately two hundred million tons. This represents 0.43 percent of the estimated available reserves. This means that less than one-half of one percent of the available reserves have been mined in the past 57 years. It is conservative to say that an equal volume of coal has been lost by mining practice, and abandonment of mines. This means that only about one percent of the available coal reserve has been utilized and lost

to date. On the basis of present production the known available coal reserve in Alberta is good for about four thousand years. It is evident that Alberta has an ample supply of available coal and there is no danger of depletion of reserves from increased production.

In Table I the estimated available coal reserves are shown in each coal area according to geological formations in which the coal seams occur.

In Table II the estimated coal reserves are subdivided according to the five group-divisions discussed in this brief under the heading "Classification of Alberta Coals". This tabulation is shown graphically on Plates 4 and 5. This classification by groups is more applicable to Alberta coals because coal in seams of a particular age becomes more mature from east to west, that is from the plains toward the Rocky Mountains. The coal under the fifty coal areas as shown on Plates 5 and 6 is classified as follows:

Group I	5 areas	16,100 million tons
Group II	5 areas	13,600 million tons
Group III	10 areas	10,200 million tons
Group IV	14 areas	5,340 million tons
Group V	16 areas	1,322 million tons

Total	46,562 million tons
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It is quite evident that Alberta has very large reserves of coal in each of five groups available for immediate production. At the same time these large reserves should not lead to wasteful mining methods in the mines now being operated because the coal deposits are now being mined where the coal is most accessible and most cheaply mined, and where the coal is as high in quality as in less accessible undeveloped areas.

SUMMARY.

1. Revision of Estimates of Coal Resources of Canada.

The Dominion figures on the coal resources in the various provinces in Canada are those given in the Coal Resources of the World published in 1912. According to these estimates Alberta contains 15 percent of the coal of the world and 87 percent of the coal in Canada. It is known that these figures on the coal resources of Canada are inaccurate.

A revision of the coal reserves in each of the coal-producing provinces in Canada should be made by the Dominion Government and based on the present knowledge of the coal deposits which is much more detailed than in 1912. The coal reserves in Alberta have been re-estimated by the Research Council of Alberta but until re-estimates are made on a uniform basis in each of the coal-producing provinces for the whole of Canada, it will not be possible to make a correct comparison between one province and another.

2. Geology of Canadian Coal Deposits.

Considering the importance of coal in the future industrial development of Canada, there is an urgent need for more detailed geological investigations in many important coal basins and coal-producing areas in Canada. Alberta is particularly in need of geological investigations on the coal deposits in various parts. It is a fact that much data on coal deposits within the Rocky Mountains in Alberta have been collected by the Geological Survey of Canada, but have not been made available by publication. This unpublished material should be made available at once. In addition, it is recommended that more extended surveys should be carried out in Alberta by the Dominion Government. The Alberta Government is prepared to co-operate fully in this work.



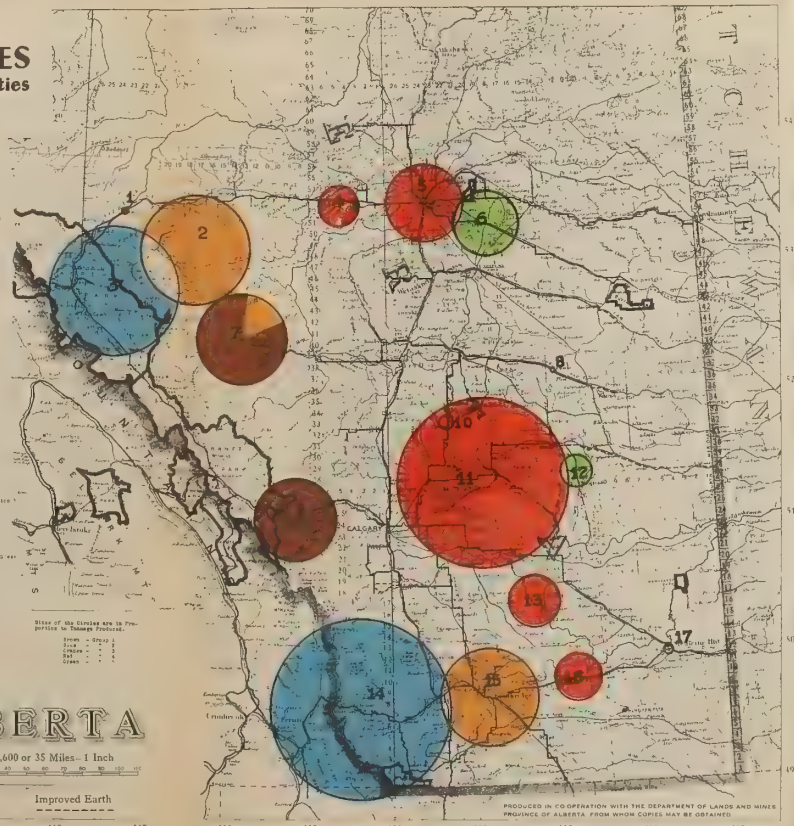
SECTION E

MINING OPERATIONS AND COAL PRODUCTION

Showing COAL MINES with export facilities

February 1945

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2. Blackfoot Coal, Ltd.
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3. Woodstock Coal, Ltd.
Calvin Coal, Ltd.
Lester Coal, Ltd.
4. Lethbridge Coal, Ltd.
5. Stirling Coal, Ltd.
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ALBERTA

Scale 1:2,217,600 or 35 Miles - 1 Inch

Highways Surfaced

Improved Earth

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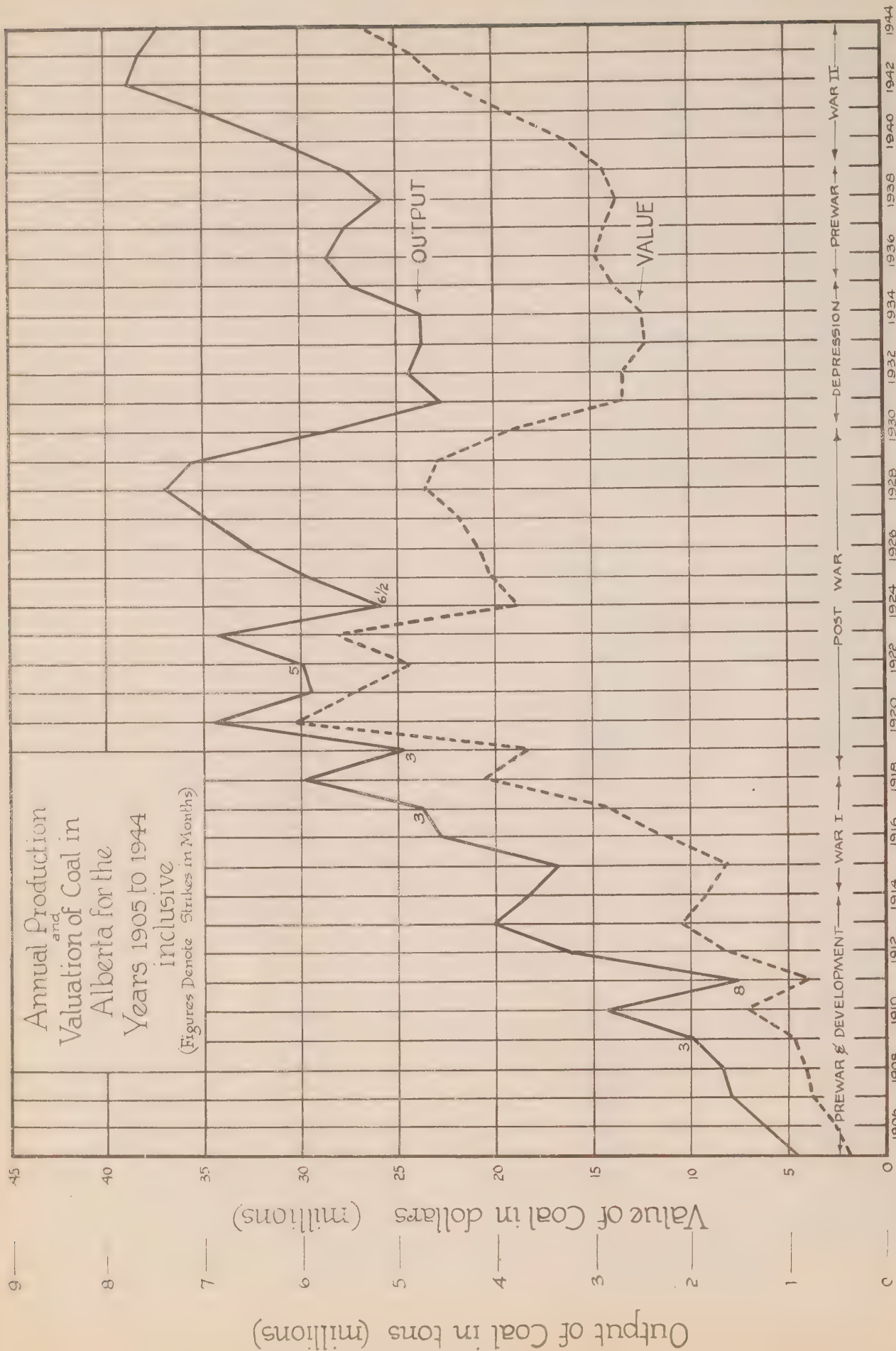
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YEARS

MINING OPERATIONS AND COAL PRODUCTION

†In presenting a picture of the coal mining industry in Alberta, as depicted in Plate 6 one cannot help seeing reflected, a history of the Province and the Nation. The early years of development, the rising production and prices of World War 1, the post-war years, the depression thirties, and again the rising production and prices of World War 2, are all shown in Table 3 and graphically outlined in Plate 7. What is to be recorded in the future, will depend greatly on the foresight shown today in planning for a balanced economy in production, employment, wages, etc., not only in coal, but other industries as well.

TABLE NUMBER 3

NUMBER OF MINES IN OPERATION AND
ANNUAL PRODUCTION OF COAL IN THE PROVINCE OF ALBERTA

The following table is taken from a report prepared by the Dominion Bureau of Statistics and published in the "Coal Statistics for Canada":

Calendar Year	No of Mines in operation	Short Tons	Value
1886	.....	43,220	\$ 81,112
1887	.....	74,152	157,577
1888	.....	115,124	183,354
1889	.....	97,364	179,640
1890	.....	128,753	198,298
1891	.....	174,131	437,243
1892	.....	178,970	460,605
1893	.....	230,070	586,260
1894	.....	184,940	473,827
1895	.....	169,885	382,526
1896	.....	209,162	581,832
1897	.....	242,163	630,408
1898	.....	315,088	787,720
1899	.....	309,600	774,000
1900	.....	311,450	778,625
1901	.....	340,275	850,687
1902	.....	402,819	960,601
1903	.....	495,893	1,117,541
1904	.....	661,732	1,404,524
1905	75	931,917	1,993,915
1906	61	1,246,360	2,614,762
1907	82	1,591,579	3,836,286
1908	112	1,685,661	4,127,311
1909	121	1,994,741	4,838,109
1910	154	2,894,469	7,065,736
1911	224	1,511,036	3,979,264

Table Number 3 continued

Calendar Year	No of Mines in operation	Short tons	Value
1912	243	3,240,577	8,113,525
1913	289	4,014,755	10,418,941
1914	264	3,683,015	9,350,392
1915	280	3,360,818	8,283,079
1916	279	4,559,054	11,386,577
1917	283	4,736,368	14,153,685
1918	317	5,972,816	20,537,287
1919	276	4,933,660	18,205,205
1920	288	6,907,765	30,186,933
1921	333	5,909,217	27,246,514
1922	379	5,990,911	24,351,913
1923	362	6,854,397	28,018,303
1924	399	5,189,729	18,884,318
1925	380	5,869,031	20,021,484
1926	341	6,503,705	20,886,103
1927	325	6,934,162	21,982,058
1928	284	7,336,330	23,532,414
1929	300	7,150,693	22,928,182
1930	301	5,755,528	18,063,225
1931	316	4,564,015	13,342,675
1932	307	4,870,648	12,307,258
1933	338	4,718,788	13,526,309
1934	320	4,753,810	12,556,099
1935	307	5,462,894	14,094,795
1936	305	5,696,960	14,659,705
1937	303	5,562,839	14,563,911
1938	302	5,251,233	13,698,470
1939	294	5,519,208	14,415,281
1940	278	6,203,839	16,377,959
1941	239	6,969,962	19,382,471
1942	204	7,754,053	22,624,410
1943	206	7,676,726	24,030,686
1944	202	7,427,433	26,741,357
Total		203,875,493	\$628,353,287

NOTE: Production quantities and values prior to 1919 refer to sales and colliery consumption. From 1919 to 1944 the mine output figures are given.

TABLE 4.

PRODUCTION OF COAL IN CANADA, BY PROVINCES, 1926 - 1944.

Year	New				Alberta		British Columbia		Yukon		Totals	
	Nova Scotia	Branswick	Manitoba	Saskatchewan	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons	Short Tons	Quantity	Value
1926	6,747,477	173,111	.....	439,803	6,503,705	2,613,719	316	16,478,131	59,875,094			
1927	7,071,876	203,950	.....	470,216	6,934,162	2,746,243	414	17,426,861	61,367,463			
1928	6,743,504	207,738	.....	471,713	7,336,330	2,804,594	414	17,564,293	63,757,833			
1929	7,056,133	218,706	.....	580,189	7,150,693	2,490,378	458	17,496,557	63,065,170			
1930	6,252,552	209,349	.....	579,424	5,755,528	2,083,818	653	14,881,324	52,849,748			
1931	4,955,563	182,181	1,306	662,836	4,564,015	1,876,406	904	12,243,211	41,207,682			
1932	4,084,581	212,695	1,552	887,139	4,870,648	1,681,490	808	11,738,913	37,117,695			
1933	4,557,590	312,303	3,880	927,649	4,718,788	1,382,272	862	11,903,344	35,923,962			
1934	6,341,625	315,750	4,113	909,288	4,753,810	1,485,969	638	13,810,193	42,045,948			
1935	5,822,075	346,024	3,106	921,785	5,462,894	1,531,287	835	13,888,006	41,963,110			
1936	6,649,102	368,618	4,029	1,020,792	5,696,960	1,489,171	510	15,229,182	45,791,934			
1937	7,256,954	364,714	3,172	1,049,348	5,562,839	1,598,843	84	15,835,954	48,752,048			
1938	6,236,417	342,238	2,016	1,022,166	5,251,233	1,440,287	361	14,294,718	43,982,171			
1939	7,051,176	468,421	1,138	960,000	5,519,208	1,692,755	...	15,692,698	48,676,990			
1940	7,848,921	547,064	1,697	1,097,517	6,203,839	1,867,846	...	17,566,884	54,675,844			
1941	7,387,762	523,344	1,246	1,322,763	6,969,962	2,020,844	...	18,225,921	58,039,630			
1942	7,204,852	435,203	1,265	1,301,116	7,754,053	2,168,541	...	18,865,030	62,897,581			
" 1943	6,103,085	372,873	999	1,665,972	7,676,726	2,039,402	...	17,859,057				
" 1944	5,753,998	343,303	.....	1,377,595	7,417,169	2,118,052	...	17,010,117				

"Figures for these two years taken from the Dominion Bureau of Statistics Monthly Report for December 1944. Remainder from the Mines Branch Report for 1944.

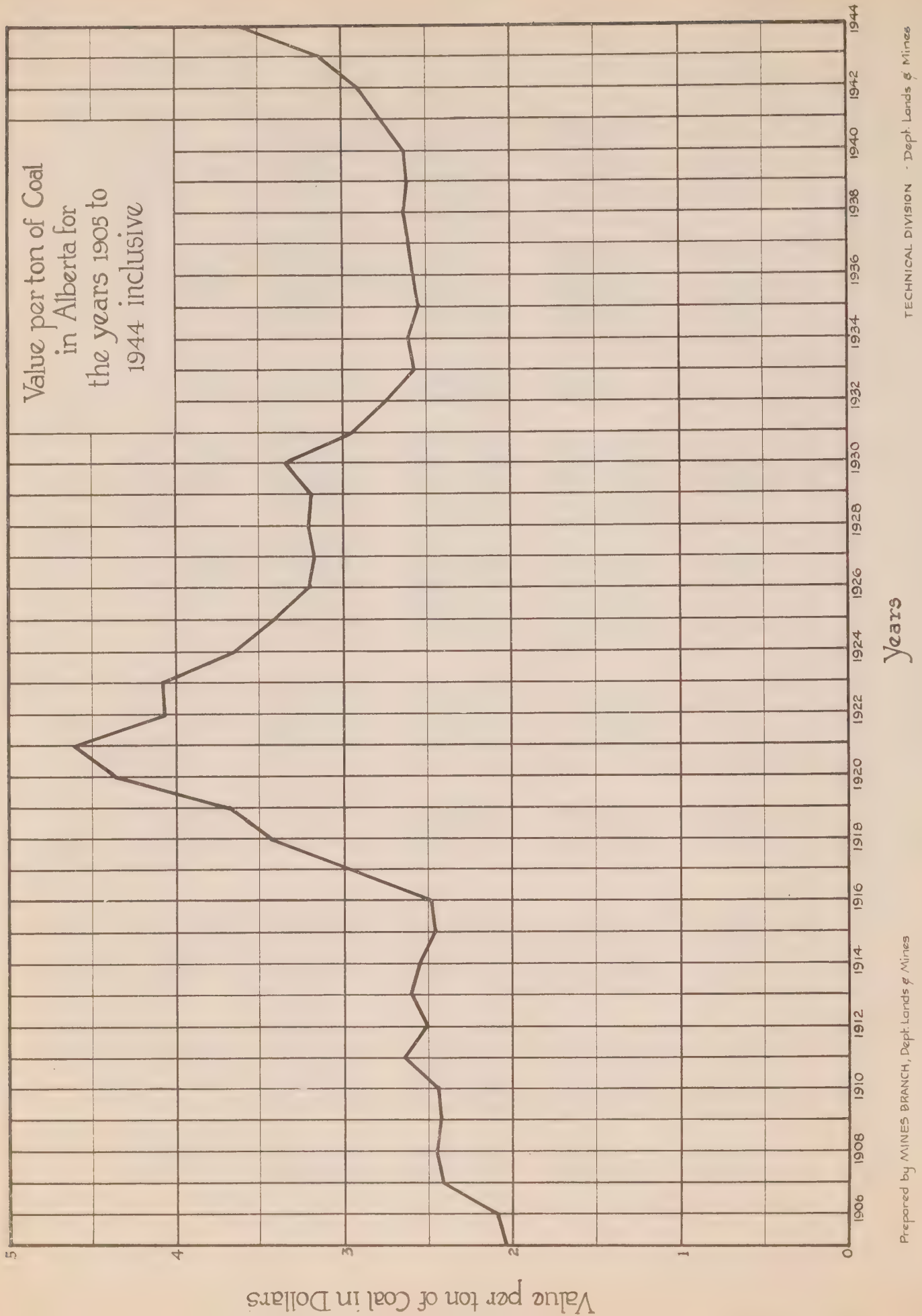


TABLE 5.

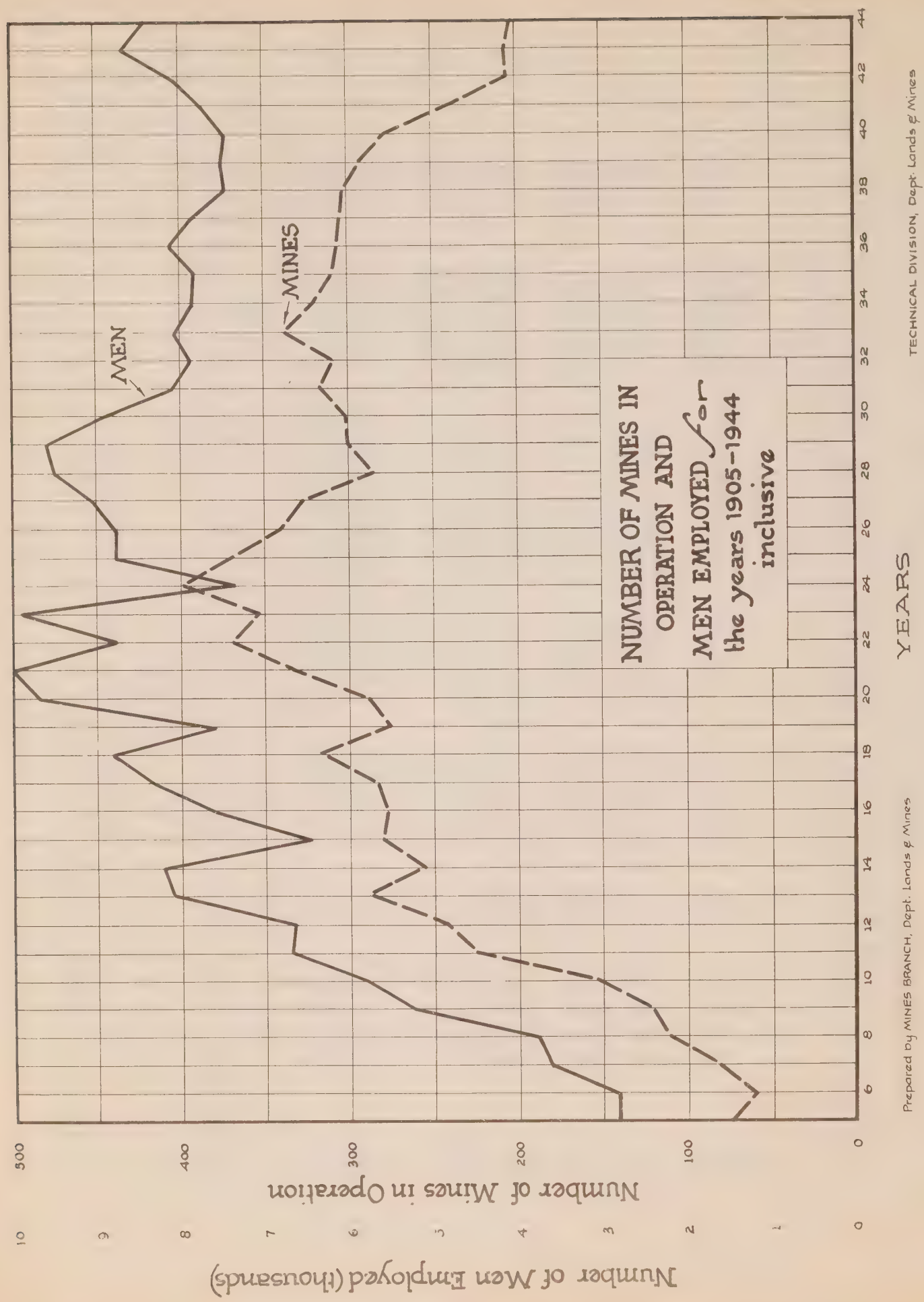
CONSUMPTION OF CANADIAN AND IMPORTED COAL IN CANADA, BY QUANTITIES AND PERCENTAGES.

1926 - 1944

Imported Coal "Entered for Consumption"									
Year	Canadian Coal Short Tons	p.c.	From U.S.A.		From United Kingdom		Total p.c.	Grand Total Short Tons	Per Capita Short Tons
			Short Tons	Short Tons	Short Tons	Short Tons			
1926	15,086,296	47.7	16,204,405	287,299	15,565,555	52.3	31,651,851	3,349	
1927	15,944,983	46.7	17,266,434	907,220	18,177,303	53.3	34,122,286	3,541	
1928	16,487,807	50.0	15,830,688	682,755	16,515,582	50.0	33,003,389	3,356	
1929	16,387,461	48.0	16,780,452	843,502	17,724,132	52.0	34,111,593	3,401	
1930	14,052,671	43.3	16,971,933	1,144,861	18,412,039	56.7	32,464,710	3,180	
1931	11,682,779	47.7	11,795,798	987,442	12,828,327	52.3	24,511,106	2,362	
1932	11,212,701	49.0	9,889,866	1,727,716	11,654,492	51.0	22,867,193	2,177	
1933	11,456,273	51.5	8,865,935	1,942,875	10,808,962	48.5	22,265,235	2,085	
1934	13,236,406	51.1	10,580,710	1,981,116	12,651,168	48.9	25,887,574	2,392	
1935	13,306,303	53.1	9,618,518	1,822,500	11,735,835	46.9	25,042,138	2,290	
1936	14,508,652	53.3	10,801,643	1,498,656	12,719,515	46.7	27,228,167	2,469	
1937	15,172,729	51.1	12,574,574	1,311,052	14,268,585	48.5	29,441,314	2,648	
1938	13,800,094	53.5	10,754,747	1,257,887	12,012,634	46.5	25,812,728	2,303	
1939	14,902,915	50.6	12,923,708	1,099,419	14,564,679	49.4	29,467,594	2,604	
1940	16,666,234	49.5	15,509,779	1,514,458	17,036,090	50.3	33,702,324	2,951	
1941	17,227,151	46.2	19,332,479	693,902	20,026,082	53.8	37,253,233	3,238	
1942	17,725,761	42.4	23,735,334	388,010	24,122,916	57.6	41,848,677	3,591	
" 1943					28,852,654		44,016,104		
" 1944					28,926,925				

" Figures for these two years taken from the Dominion Bureau of Statistics Monthly Report for December, 1944. Remainder taken from the Mines Branch Report for 1943.

1. The sum of Canadian coal mines' sales, colliery consumption, coal supplied to employees and coal used in making coke etc., less the tonnage of coal exported.
2. Includes small tonnages from countries other than the United Kingdom and the United States.



On examining Plate 7, valleys in the production curve caused by strikes, are denoted by small figures which give the duration of each, in months. It will be noted that previous to War 1, there was depression from 1913 to 1915, and the next large valley denotes the depression years of the thirties.

Also, it will be noted that the valuation curve follows the output curve fairly well up to 1924, and from there on the valuation falls away from the production curve, showing a drop in the valuation per ton. This is better illustrated in Plate 8, which shows the valuation per ton, in dollars, for the same years.

The rate of increase in the dollar value of coal for the last two years of this war, compares closely with the last two years of War 1. Whether or not the increase will continue, will depend on price control.

Alberta is one of the two principal coal producing areas of the Dominion, the other being Nova Scotia. During the past five years, they have produced together, and in about equal proportions, 78% or nearly four-fifths of the coal mined in Canada, other provinces producing the remaining one-fifth. (Table 4)

In 1943 Alberta produced a million and a half tons more coal than Nova Scotia, and nearly 1.7 million more in 1944. With a total Canadian production of between 17 and 18 million tons, (Table 4) and a consumption of over 44 million tons in 1943 (Table 5), 28 million tons, largely from the United States, were imported principally from the United States, regardless of the fact that the Canadian mines were not operating full time. To the Dominion Government and those interested in the coal industry, the matter should be of grave concern, requiring not only action now, but the formulation of a clear-cut National policy for the future.

In Sir Montague Barlow's Coal Commission Report of 1935, p. 5, he stated that the two principal problems were "Marketing and Regulation." At that time he classed the finding of adequate markets as an urgent problem demanding the immediate attention of the Government and the industry. After ten years, it still remains an urgent problem, and no nearer solution. Until a satisfactory national coal policy is put into effect measures are taken for its correction, it will remain a problem.

Since the Barlow Report, many regulations have been enacted improving conditions in the mines as to health, safety and working methods in general, but as the enumeration of them here has no bearing on the question of markets, and would only tend to increase the length of this brief, they have been omitted.

However, in passing, reference should be made to the oft-repeated statements in the Barlow Report, to the over-development of coal mining in Alberta, as at the foot of p. 21 of that report.

The Evans' report gave 399 mines in operation for the year 1924 (Table 3). The Barlow Report gave 276 mines in operation for 1934, and The Mines Branch Report for 1944 (unpublished) gave 202 mines in operation for the year, with 180 in operation as at December 31st, 1944.

A glance at Plate 9 shows the number of men employed and the mines in operation for the years 1905 to 1944. It will be noted that the number of mines in operation, has, with small fluctuations, steadily decreased since 1924, to a point about equivalent to the mines in operation during 1910 and 1911. It is interesting to note, that during the earlier years from 1905 to 1924, there is a definite and positive correlation between the number of men employed and the number of mines in operation. From 1924 to 1944 although the trend of the number of men employed is downward, there is an inverse relationship to the number of mines in operation. A decrease

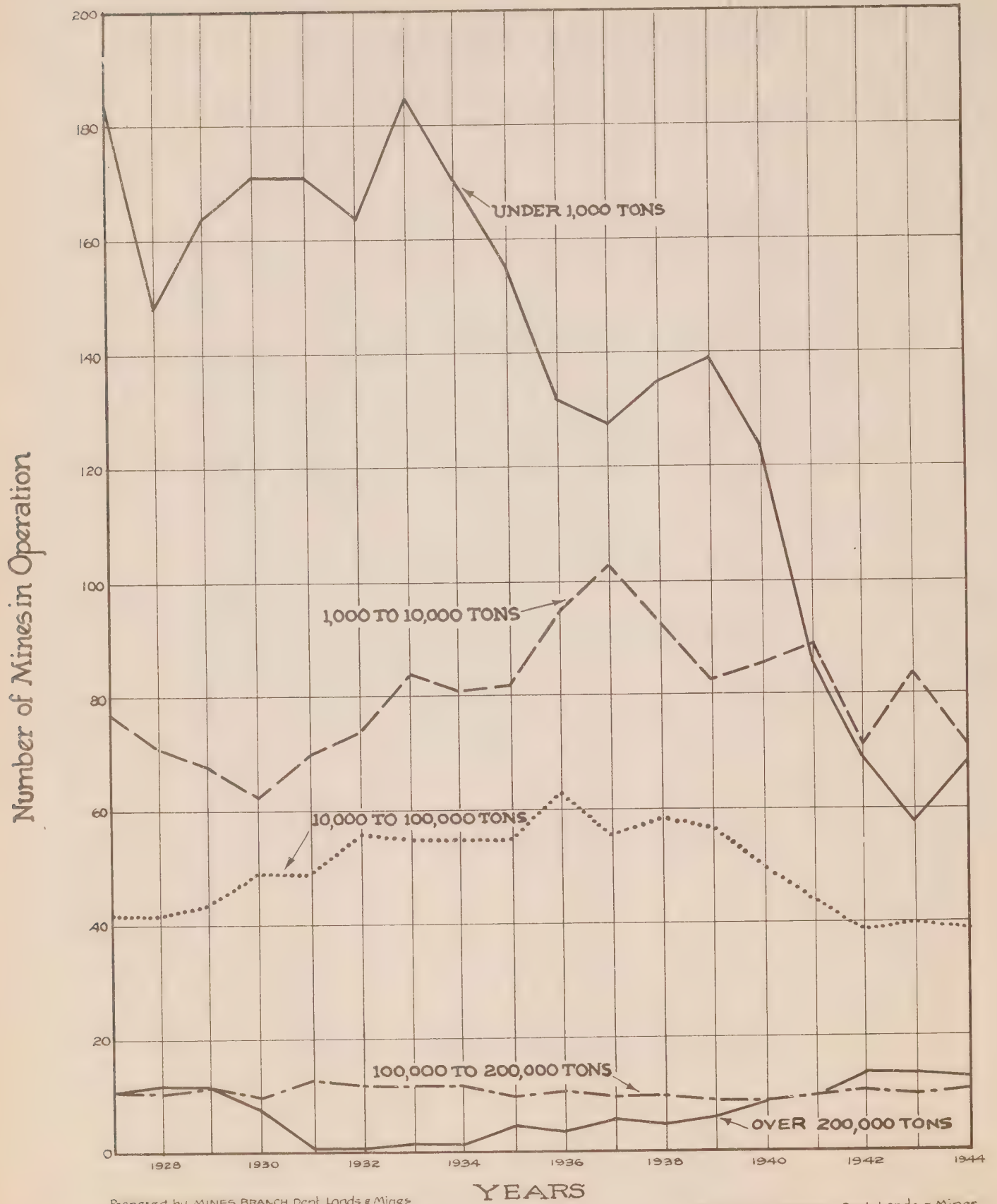
Table 6

The number of Mines Grouped According to the Production
of Coal, for the years 1927 to 1944

Year	Under 1000 tons	1000 to 10,000 tons	10,000 to 100,000 tons	100,000 to 200,000 tons	Over 200,000 tons	Total
1927.....	184	77	42	11	11	325
1928.....	148	71	42	11	12	284
1929.....	164	68	44	12	12	300
1930.....	171	63	49	10	8	301
1931.....	171	70	49	13	1	304
1932.....	164	74	56	12	1	307
1933.....	185	84	55	12	1	338
1934.....	170	81	55	12	2	320
1935.....	155	82	55	10	5	307
1936.....	132	95	63	11	4	305
1937.....	128	103	56	10	6	303
1938.....	135	93	59	10	5	302
1939.....	139	83	57	9	6	294
1940.....	124	86	50	9	9	278
1941.....	86	89	44	10	10	239
1942.....	69	71	39	11	14	204
1943.....	58	84	40	10	14	206
1944.....	68	71	39	11	13	202

NUMBER OF MINES IN OPERATION Grouped According
to PRODUCTION for the years 1927-1944
inclusive

PLATE 10



T A B L E N O. 7

AMOUNT OF COAL SOLD DURING THE YEARS 1915 TO 1943 (INCLUSIVE) FOR CONSUMPTION IN:

<u>YEAR</u>	<u>ALBERTA</u>	<u>BRITISH COLUMBIA</u>	<u>SASKAT- CHEWAN</u>	<u>MANITOBA</u>	<u>ONTARIO</u>	<u>NORTH- WEST TERRITORIES</u>	<u>QUEBEC</u>	<u>UNITED STATES</u>	<u>TO RAILROADS</u>	<u>TOTAL</u>
1915	2,129,130	54,860	695,898	64,816	.....	.....	.....	25,047	.....	2,969,751
1916	2,866,670	86,413	1,007,765	97,265	.....	.....	.....	61,092	.....	4,119,205
1917	2,813,412	76,397	1,139,771	249,872	.....	.....	.....	93,081	.....	4,372,534
1918	3,440,154	101,199	1,372,439	511,168	.....	.....	.....	138,276	.....	5,558,855
1919	2,991,110	95,461	1,115,329	314,290	.....	.....	.....	121,212	.....	4,637,710
1920	1,647,202	128,850	1,310,146	600,962	13,911	.....	.....	20	.....	6,371,256
1921	1,415,861	116,089	1,294,441	495,388	9,698	.....	.....	152,610	2,516,555	6,488,704
1922	1,443,942	107,920	1,371,249	520,518	21,573	.....	.....	135,823	2,023,204	5,647,109
1923	1,392,788	108,326	1,223,454	553,649	52,334	.....	.....	105,514	2,076,291	6,514,219
1924	1,431,827	114,186	1,189,798	510,407	16,525	.....	.....	83,557	3,110,121	4,914,949
1925	1,440,082	117,027	1,297,653	509,655	22,680	.....	.....	39,142	2,139,716	5,572,431
1926	1,325,290	127,858	1,296,181	591,267	74,359	.....	.....	40,507	2,706,440	6,170,032
1927	1,508,069	187,028	1,427,904	612,542	22,680	.....	.....	221	48,216	6,632,168
1928	1,409,475	262,198	1,511,141	605,125	44,265	.....	.....	.....	2,759,765	6,938,708
1929	1,446,555	236,840	1,455,213	588,647	55,647	.....	.....	52,265	3,054,239	6,798,075
1930	1,234,382	227,385	1,221,542	541,537	29,784	.....	.....	51,625	2,923,927	5,419,190
1931	1,080,694	171,610	905,574	442,761	27,036	.....	.....	44,291	2,120,237	4,266,660
1932	1,134,311	136,188	1,097,882	497,006	20,583	.....	.....	100	1,668,451	4,532,892
1933	1,122,337	120,911	1,052,310	449,681	39,437	.....	.....	135	1,619,921	4,304,838
1934	1,087,898	127,638	986,639	391,132	55,947	.....	.....	32	1,500,061	4,250,874
1935	1,246,969	221,758	1,120,816	435,813	64,659	31	.....	13,739	1,687,850	5,075,272
1936	1,356,690	244,928	1,238,730	450,740	65,866	.....	.....	24,712	1,960,555	5,231,940
1937	1,326,054	269,023	1,085,812	427,954	62,521	.....	.....	27,897	1,969,369	5,231,163
1938	1,278,952	238,425	1,011,207	413,663	74,111	83	.....	41,328	2,028,389	4,920,800
1939	1,241,618	239,227	1,044,367	409,046	90,206	.....	.....	33,139	2,109,684	5,167,287
1940	1,311,644	237,642	1,019,035	354,857	132,587	14	.....	35,354	2,720,793	5,812,926
1941	1,335,606	304,928	1,052,213	430,563	234,606	.....	.....	32,742	3,090,290	6,481,748
1942	1,474,795	652,222	1,269,669	580,336	231,258	.....	.....	98,197	2,864,586	7,171,063
1943	1,560,212	864,911	1,455,612	627,368	1,190	.....	.....	414,627	2,098,535	7,071,753

NOTE: Previous to 1920 Railroad Coal was included in Sales in Alberta.

NOTE: Included in the above total are 49,298 tons for Ship's Bunkers in 1943.

in the number of mines accompanies an increase in the men employed and vice-versa.

An analysis of the reduction in the number of mines in operation for the years 1927 to 1944, produces some rather interesting results, as shown in Table 6 and Plate 10. From these it will be noted that from 1933 a rapid decline has occurred in the number of small mines producing under 1000 tons annually. Similar and less rapid declines are outlined for mines producing from 1000 to 10,000 tons and from 10,000 to 100,000 tons annually. These declines occurring from 1937 and 1936 respectively. However, in the case of the larger mines, those producing between 100,000 and 200,000 tons, the number remains about constant, while those producing over this figure, have gradually increased since 1932. In other words, the small mines apparently are not able to compete with the larger.

This constant reduction in the number of mines in operation, has been partly brought about by lack of markets, insufficient capital, costs, mechanization and other factors, and partly by the unwritten policy of The Mines Branch, to withhold license to operate within an area unless the applicant could show a specific need. Nevertheless, while we are importing so much coal there is no reason why we can not have complete access to the entire Canadian market and thus keep our mines operating.

Consider the production and importations for consumption, for the past seven years:

Year	Canadian Production of coal	Coal imported for con- sumption
	Tons	Tons
1938	14,294,718	12,012,634
9	15,692,698	14,564,679
1940	17,566,884	17,036,090
1	18,226,921	20,026,082
2	18,865,030	24,122,916
3 *	17,859,057	28,852,654
4 *	17,010,117	28,926,925

From the above, it will be seen that importations have steadily increased and are now more than twice that of 1938, while Canadian production has risen a mere three million tons since that date, declining in the past two years.

Alberta consumes, exclusive of railway coal, only about one and a half million tons of the seven and a half million produced (Table 7) it is therefore a coal exporting province.

* Figures for these two years taken from the Dominion Bureau of Statistics Report for December 1944. The remainder were taken from the Canada Year Book.

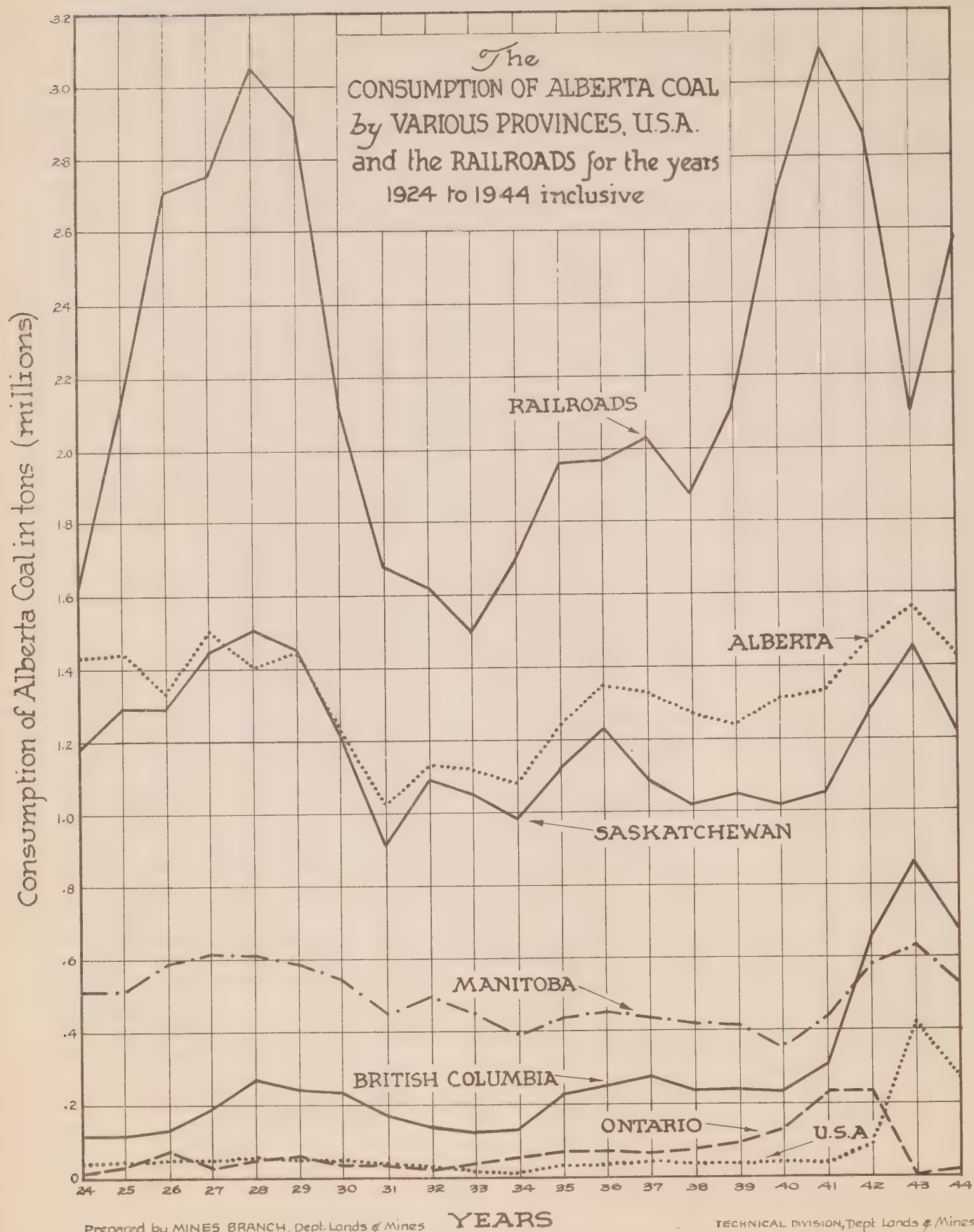


TABLE 8

AVERAGE NUMBER OF DAYS WORKED IN THE COAL AREAS OF ALBERTA
FOR THE YEAR 1943

DOMESTIC FIELD

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Ardley	16.9	13.6	8.6	0.1	-	2.5	6.2	10.0	14.5	16.5	19.1	12.8	
Big Valley	21.8	16.0	16.5	5.2	5.2	11.5	11.0	11.5	11.2	16.2	23.8	15.2	
Brooks	25.5	22.0	13.5	11.5	13.0	13.0	13.0	13.0	23.0	24.5	26.0	22.0	
Camrose	20.8	16.6	17.2	7.6	9.4	9.2	11.7	8.5	7.5	13.5	21.3	20.3	
Carbon	18.5	16.9	13.0	4.8	6.9	7.8	9.7	14.4	14.3	15.1	15.4	12.9	
Castor	20.9	19.8	16.7	5.0	4.8	3.3	7.3	12.0	13.2	14.1	19.7	15.8	
Champion	22.0	19.2	21.0	11.2	17.7	21.0	24.5	25.2	24.8	21.2	25.3	20.7	
Drumheller	18.0	18.2	19.9	10.4	14.8	18.0	13.8	16.2	17.9	19.7	17.4	20.2	
Edmonton	21.6	20.9	21.4	9.0	15.8	17.0	17.6	17.1	18.5	20.4	15.3	21.3	
Gleichen	19.0	20.5	21.5	12.0	13.0	14.5	16.5	17.8	17.5	17.8	18.2	19.7	
Halcourt	12.3	20.5	21.0	1.0	-	-	-	-	5.0	4.8	10.2	10.4	
High Prairie	-	-	-	-	-	-	-	-	-	-	-	27.0	
Lethbridge	20.2	19.4	20.0	17.2	16.5	19.4	17.7	17.0	17.8	18.2	16.8	19.6	
Milk River	10.7	4.7	5.3	4.3	4.3	5.0	8.3	18.3	15.3	17.0	16.7	13.3	
Pakowki	6.0	6.0	7.0	1.0	-	10.5	8.0	1.3	10.7	14.5	15.5	11.0	
Pembina	16.0	18.0	12.5	6.0	4.5	6.5	3.6	3.3	3.4	9.1	8.1	10.3	
Redcliff	20.5	20.5	23.5	15.0	11.5	20.5	22.5	22.0	23.5	23.5	24.0	17.0	
Rochester	24.5	23.5	24.0	4.0	3.0	3.0	2.0	2.0	10.5	19.0	25.0	26.0	
Sheerness	13.7	12.3	12.2	8.8	5.8	6.0	5.5	12.8	14.0	16.0	16.5	13.4	
Taber	14.8	12.8	12.3	6.3	6.8	10.2	4.3	4.7	7.2	8.2	7.0	7.7	
Tofield	20.5	22.2	13.8	7.5	6.2	5.8	6.2	10.0	10.2	14.0	24.8	18.8	
Wetaskiwin	25.0	24.0	24.0	5.0	-	8.0	10.0	20.0	24.0	25.0	25.0	22.0	
Whitecourt	18.0	18.0	-	-	-	-	-	-	-	-	10.0	7.0	
Weighted Average	18.7	20.8	20.1	7.5	9.2	10.7	10.3	12.7	14.4	16.1	17.0	16.8	

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SUB-BITUMINOUS FIELD

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Coalspur	17182	17154	18531	15073	14350	14987	14772	15052	14735	15757	13163	16194	
Pekisko	366	305	350	154	254	236	254	227	212	243	261	184	
Pincher	32	27	21	4	8	12	10	5	5	20	52	52	
Prairie Creek	---	---	---	---	---	---	161	302	370	450	450	427	
Saunders	3150	3238	3281	2521	2556	2102	2771	2735	2634	2634	2115	2681	
Total	20730	20724	22183	17752	17168	17337	17968	18321	17956	19104	16041	19538	

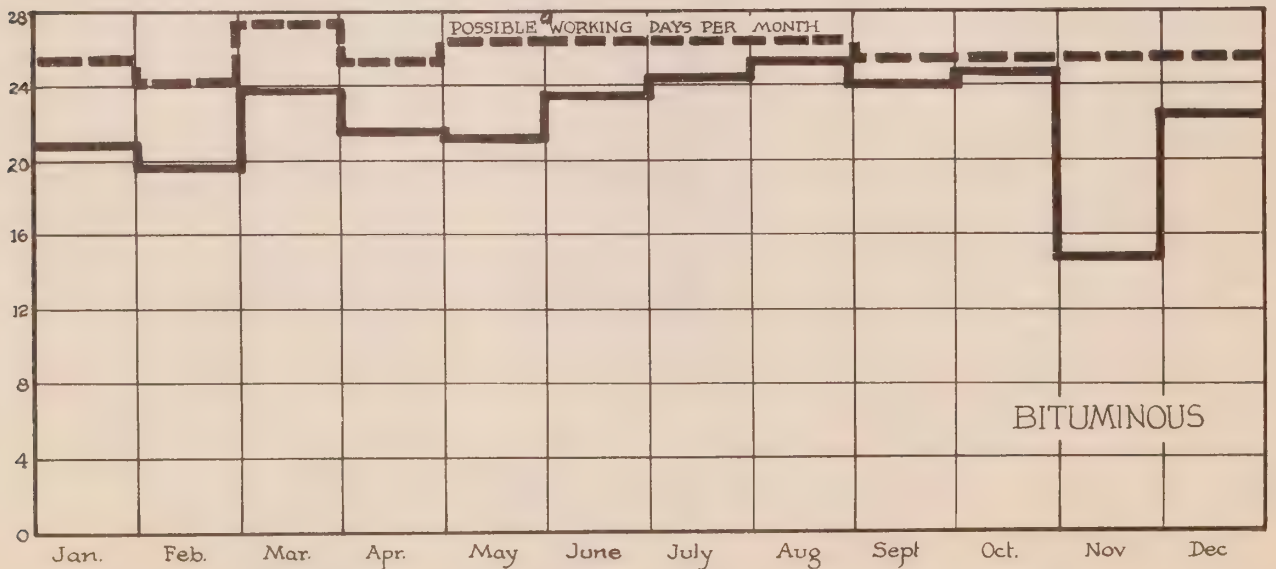
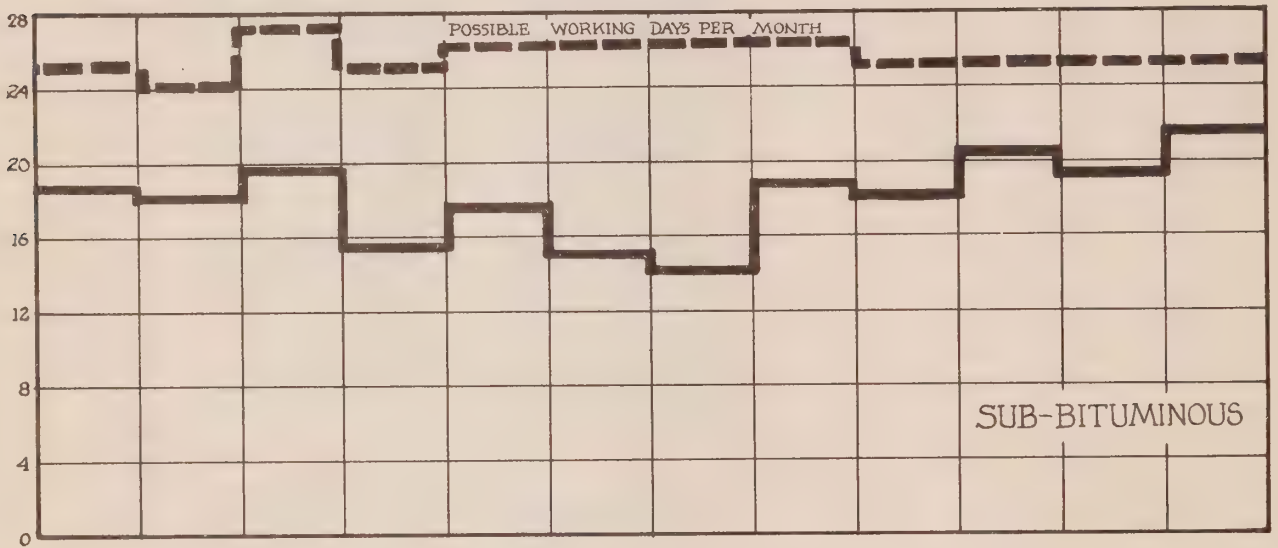
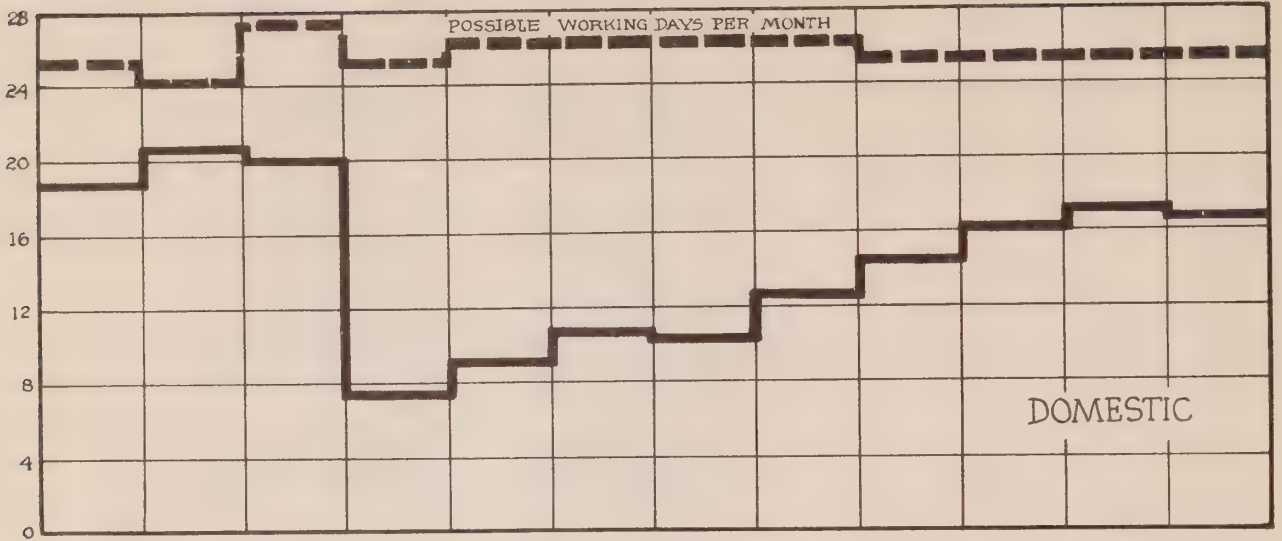
BITUMINOUS FIELD

Cascade	6682	6624	7259	6822	6757	7064	6958	6399	6992	7126	5414	7387	
Crowsnest	43108	42437	51314	45084	44455	45645	48266	46798	46700	44865	34041	45038	
Mountain Park	20026	20555	21906	19838	18221	20101	20252	20104	19454	20244	14793	20905	
Nordegg	9501	9905	10287	9387	8704	9443	9130	9334	9138	8830	8115	9085	
Total	79317	79521	90766	81131	79137	82253	84606	82635	82284	81065	62363	82415	
GRAND TOTAL	195799	193043	208123	155648	163214	175766	177800	184254	186005	192333	165658	202783	2,200,426.

Days Worked in Alberta Coal Fields for the Year 1943

PLATE 12

Days Worked



MONTHS

How Alberta coal is consumed is graphically shown in Plate 11. Home consumption of Alberta coal, except for the depression years, has remained in the neighborhood of $1\frac{1}{2}$ million tons. Saskatchewan has consumed about an equal amount of Alberta coal, but during the past few years, the Saskatchewan curve has fallen away from the Alberta curve and will probably continue to do so with increasing production in that Province.

For the past 20 years Manitoba has consumed, with slight fluctuations, about one-half million tons of Alberta coal, and will probably not change appreciably unless conditions change greatly.

On the other hand, British Columbia and Ontario, give steadily rising consumption curves for Alberta coal and although the British Columbia curve has risen rapidly since the outbreak of this war, and with a possible post-war recession, consumption is likely to increase after a period of adjustment. However Ontario shows a small but steadily increasing curve until 1942 and would have undoubtedly increased still further but for the stoppage of shipments ordered in 1943. Because the consumption of this province is great, entry of Alberta coal in substantial quantity would largely stabilize Alberta's coal industry.

In regard to stabilization, there is one other large factor, and that is railroad consumption. In the years 1928 and 1941, the railroads consumed more coal than the Province of Alberta and Saskatchewan combined, while in 1933, they consumed about $1\frac{1}{2}$ million tons, a little more than the average consumption in Alberta. Such tremendous fluctuations undoubtedly create unstable conditions in the industry. By referring to the production curve in Plate 7 for the same years, a marked similarity is shown between this curve and the curve for railroad consumption. Alberta's main problem now is one of distribution rather than production.

In submitting the case for Alberta, insofar as this section of the brief is concerned, the year 1943 was chosen primarily because it was the latest year for which published and revised figures were available, and that it occupied a medium position in the production of coal for the past three years. If the years 1942, 1943 and 1944 were taken singly or averaged, the result would not materially change the picture. Another reason for selecting this year, is that it is one of the high production years, and as such should have shown a high level of employment, and if any other year of lower production had been taken, the picture would have been still further depressed. Hence any statements made, refer to the year 1943 unless otherwise stated.

Coming back to the question of the amount of time worked by the mines in Alberta, the domestic coal field, producing about three-sevenths of the annual output, worked on the average, about $14\frac{1}{2}$ days for a 25 working day month. (Table 8 and Plate 12) The sub-bituminous and bituminous fields were substantially better with 18 and 22 days respectively. Even in the sub-bituminous field this is equivalent to a one-week layoff every month of the year. A perusal of the individual mine reports would reveal that in many instances the reported days worked showed that the men were not employed in drawing coal, but were engaged in maintenance and other work, which could have been done readily with a maintenance crew, if sufficient orders were forthcoming to keep the regular crew at their normal mining operations. The number of days worked is graphically illustrated in Plate 12.

TABLE 9

Total Number of Manshifts Worked in the Coal Areas of
Alberta for the year 1943:

DOMESTIC FIELD

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Ardley	493	319	210	36	2	40	158	226	355	458	639	333	
Big Valley	484	431	378	242	167	358	295	357	435	488	603	505	
Brooks	397	306	268	196	198	249	314	354	401	453	679	556	
Camrose	1999	1725	1844	1375	1430	1589	1638	1722	1557	1901	1745	2978	
Carbon	2707	2356	2378	1294	1371	1673	1853	1390	1847	1969	2174	1909	
Castor	2594	2618	1658	367	443	422	1024	1447	1707	2201	4086	2789	
Champion	522	469	487	193	301	404	490	517	520	496	535	418	
Drumheller	45916	44828	49013	27283	38214	43096	39566	46156	45427	47152	38864	47500	
Edmonton	16933	16314	16122	9603	9118	9901	10962	11763	12076	13405	10354	16662	
Gleichen	2007	2091	1524	427	520	726	669	774	750	1049	1389	1358	
Halcourt	185	286	334	25	--	---	114	89	73	142	321	347	
High Prairie	--	--	--	--	--	---	---	--	--	--	---	81	
Lethbridge	15663	15175	15864	12673	12159	13864	14266	14790	14780	15231	13171	16337	
Milk River	78	27	28	13	19	22	108	115	279	284	260	140	
Pakowki	--	24	14	9	7	21	24	17	31	44	52	34	
Pembina	1383	1489	1433	1036	1036	1339	1261	1252	1206	1580	1401	2737	
Redcliff	782	612	1015	468	391	911	753	758	822	863	862	574	
Rochester	365	314	101	48	130	39	36	37	87	141	276	385	
Sheerness	692	600	558	321	270	297	266	497	547	655	725	797	
Taber	567	522	549	278	339	510	451	93	1389	2542	7329	2795	
Tofield	1802	1918	1296	858	754	699	874	858	1358	967	1679	1508	
Wetaskiwin	165	120	100	20	40	---	80	80	100	140	100	80	
Whitecourt	18	54	---	---	---	16	24	6	16	3	10	7	

Total

95752 92798 95174 56765 66909 76176 75226 83298 85765 92164 87254 100830

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SUB-BITUMINOUS FIELD

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Coalspur	20.7	20.8	23.5	22.0	22.7	20.0	17.0	23.3	23.8	23.7	16.0	22.7	
Pekisko	23.0	22.0	24.0	12.0	23.0	23.5	25.0	24.0	22.5	24.0	24.0	18.5	
Pincher	14.0	9.0	7.0	2.0	-	-	-	-	-	-	26.0	21.0	
Prairie Creek	22.5	24.0	26.5	22.5	23.0	14.0	16.5	26.0	2.0	25.0	20.0	20.0	
Saunders									24.5	25.0	17.5	23.5	
Weighted Average	18.7	18.1	19.7	15.8	17.5	15.0	14.2	18.5	18.4	20.4	19.3	21.7	

BITUMINOUS FIELD

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Cascade	25.0	23.5	26.5	25.0	24.5	25.0	25.5	24.0	25.0	25.5	21.0	25.5	
Crowsnest	19.2	16.0	22.6	18.7	19.3	22.3	23.7	25.7	23.0	23.8	14.5	20.7	
Mountain Park	22.0	24.0	24.8	24.5	22.8	25.0	25.5	25.5	25.0	25.3	11.7	23.5	
Nordegg	20.0	21.0	24.0	23.0	22.0	23.0	22.0	23.0	25.0	25.0	19.0	24.0	
Weighted Average	20.9	19.7	23.9	21.6	21.2	23.5	24.4	25.2	24.0	24.6	14.9	22.4	

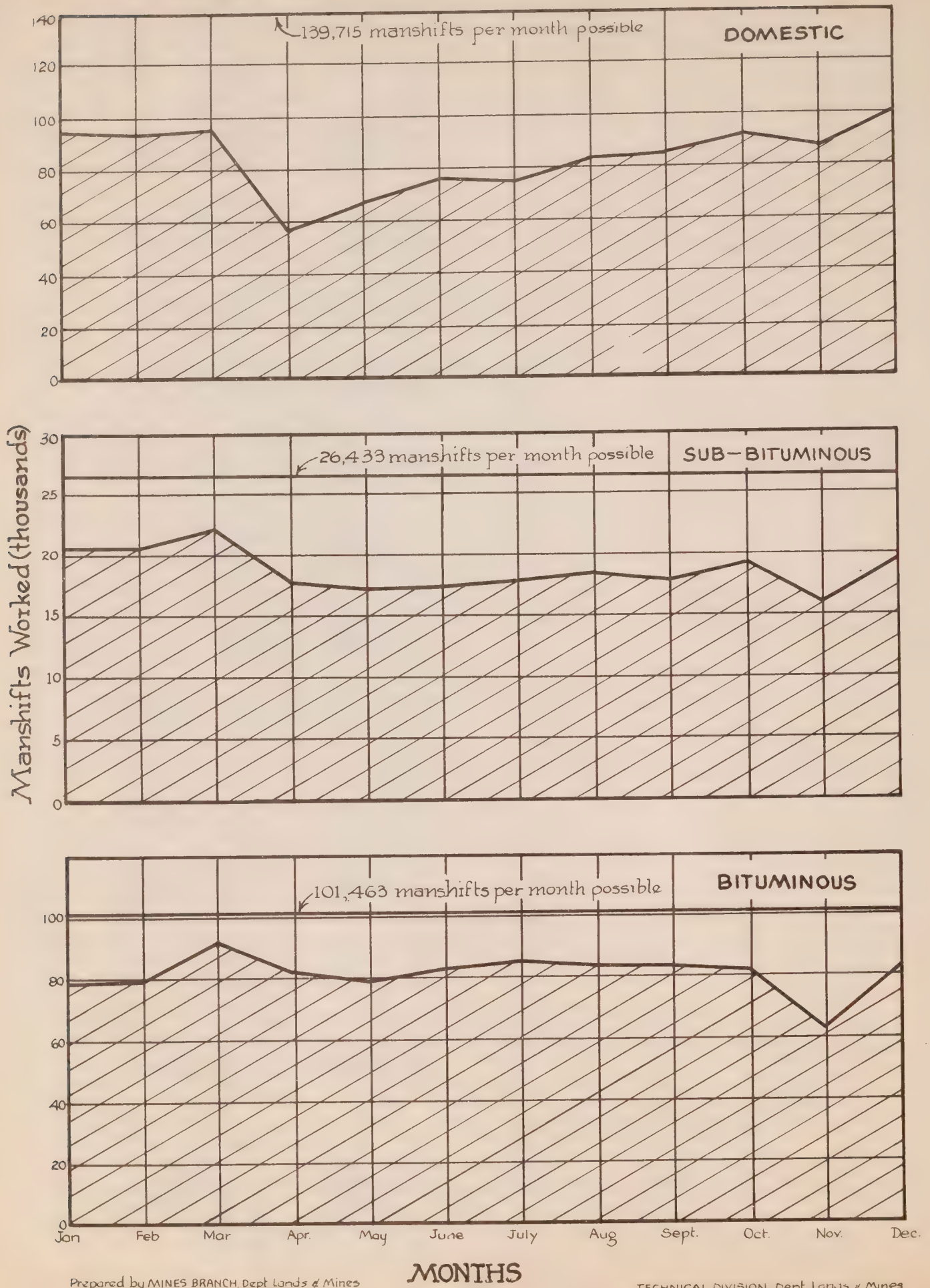


Table 10

Total tonnages of coal produced and man-shifts worked for each area, with the possible calculated tonnages and man-shifts that could have been obtained if all mines had worked one 8 hour shift each working day for the year 1943:

Area	(1) Total Tonnage	(2) Total Man- shifts	(3) Possible man- shifts. (Great est No. of men X 290.)	Possible Tonnage $\frac{1 \times 3}{2}$
<u>DOMESTIC FIELD</u>				
Ardley.....	10,239	3,269	11,890	37,241
Big Valley	12,836	4,743	11,020	29,823
Brooks.....	30,381	4,371	11,020	76,595
Camrose.....	63,834	21,503	42,050	124,830
Carbon.....	68,391	23,121	45,530	134,675
Castor.....	59,764	21,356	65,830	184,222
Champion.....	11,776	5,352	10,150	22,333
Drumheller.....	1,838,738	513,015	702,090	2,516,400
Edmonton.....	457,002	153,215	263,610	786,320
Gleichen.....	21,369	13,284	27,550	44,317
Halcourt.....	1,873	1,916	6,670	6,520
High Prairie...	191	81	870	2,051
Lethbridge.....	579,234	173,973	217,500	724,150
Milk River.....	2,634	1,373	3,190	6,119
Pakowki.....	419	277	1,160	1,754
Pembina.....	53,611	17,153	40,020	125,080
Redcliff.....	28,165	8,811	12,760	40,788
Rochester.....	7,287	1,959	7,540	28,046
Sheerness.....	58,933	6,225	13,340	126,291
Taber.....	20,596	17,364	61,770	73,267
Tofield.....	85,313	14,571	35,380	207,149
Wetaskiwin.....	3,272	1,025	2,030	6,480
Whitecourt.....	179	154	1,160	1,348
Total.....	3,416,037	1,008,111	1,594,130	5,305,799

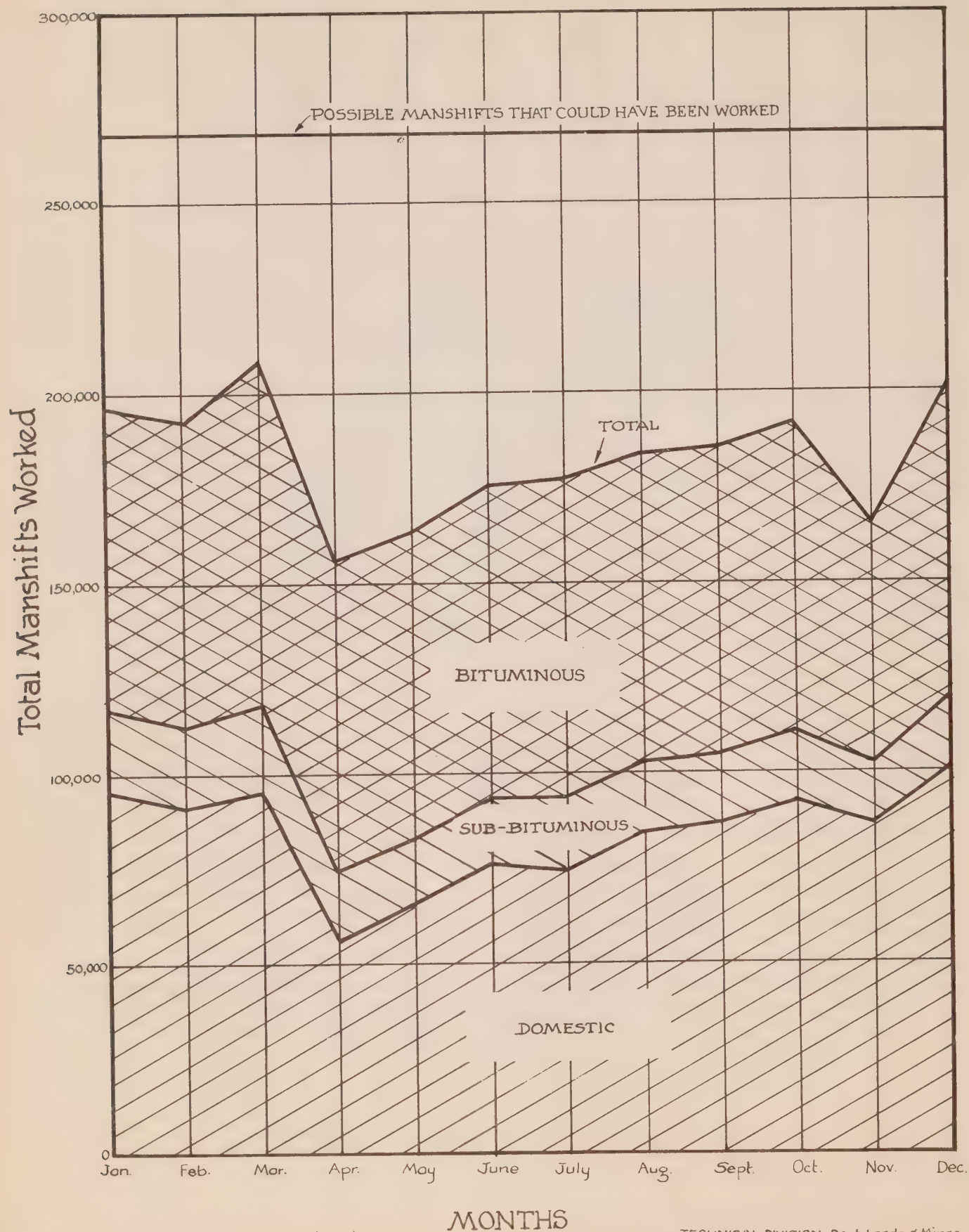
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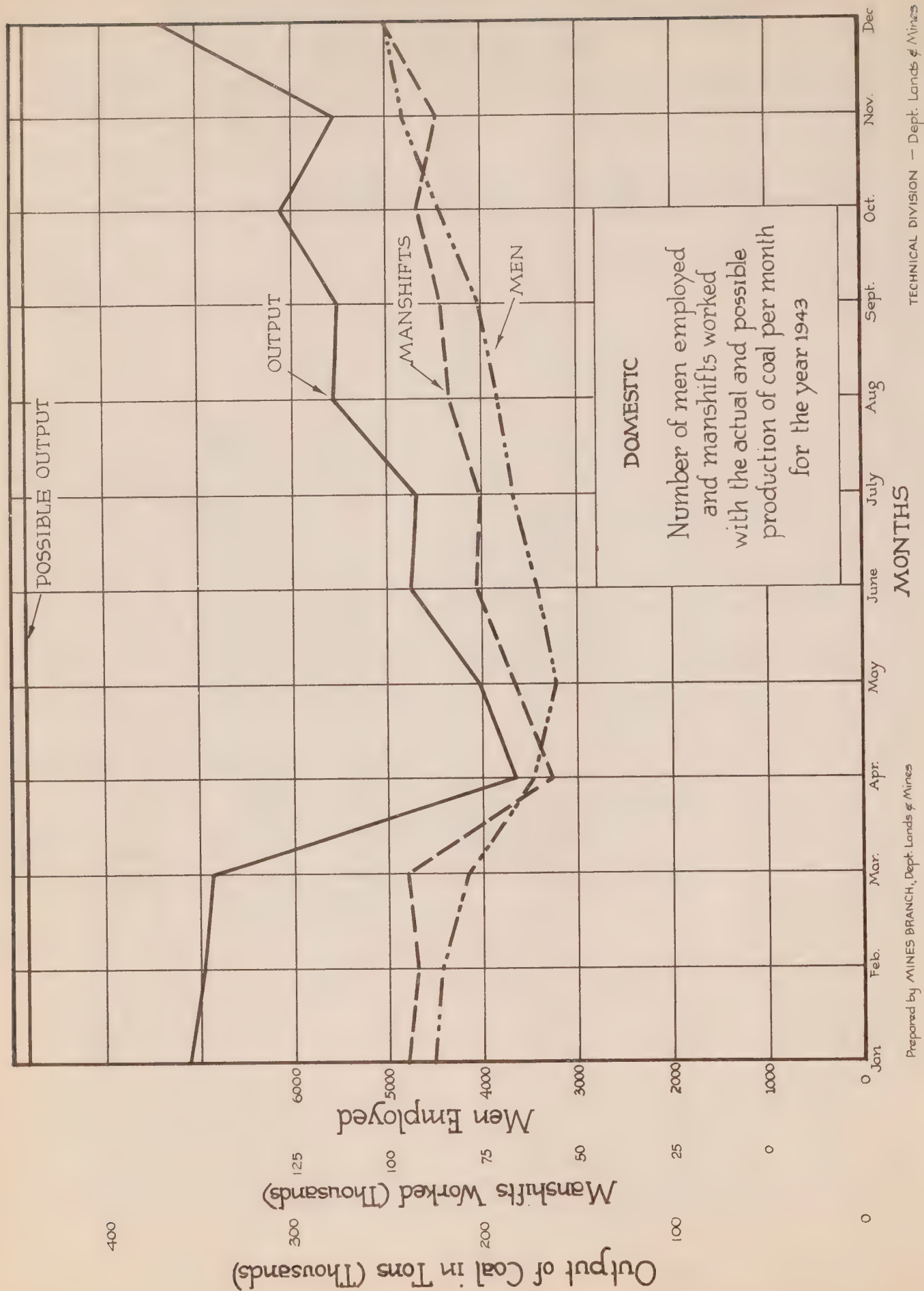
Area	(1) Total Tonnage	(2) Total Man- shifts	(3) Possible man- shifts. (Great- est No. of men X 290 #).	Possible Tonnage ($\frac{1 \times 3}{2}$)
<u>SUB-BITUMINOUS FIELD</u>				
Coalspur	713,082	186,950	221,850	846,200
Pekisko	11,802	3,046	4,930	19,101
Pincher	451	248	870	1,582
Prairie Creek..	1,828	2,160	6,090	5,154
Saunders	64,789	32,418	38,860	77,663
Total	791,952	224,822	272,600	949,700
<u>BITUMINOUS FIELD</u>				
Cascade.....	343,476	81,484	93,960	396,070
Crowsnest	1,962,557	537,751	662,360	2,417,300
Mountain Park...	843,411	237,399	272,310	967,420
Nordeggs.....	320,549	110,859	129,050	373,140
Total.....	3,469,993	967,493	1,157,680	4,153,930
GRAND TOTAL....	7,677,982	2,200,426	3,024,410	10,409,429

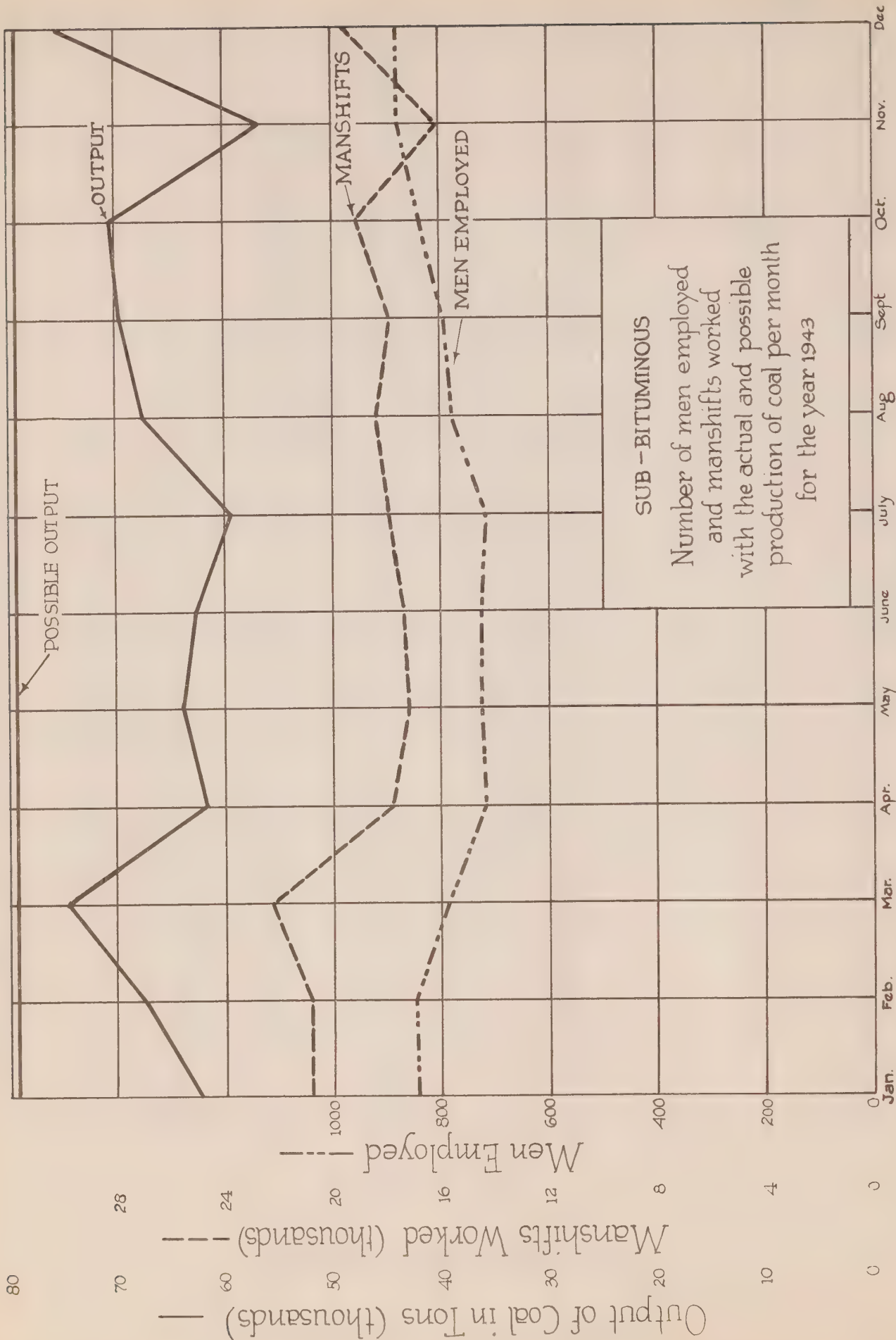
The mines could work approximately 305 days a year, when Sundays and statutory holidays are deducted. As each man would probably have 14 days deducted for holidays, the figure of 290 was adopted.

Total Manshifts Worked per month in the Coal Fields of Alberta for the year 1943

PLATE 14



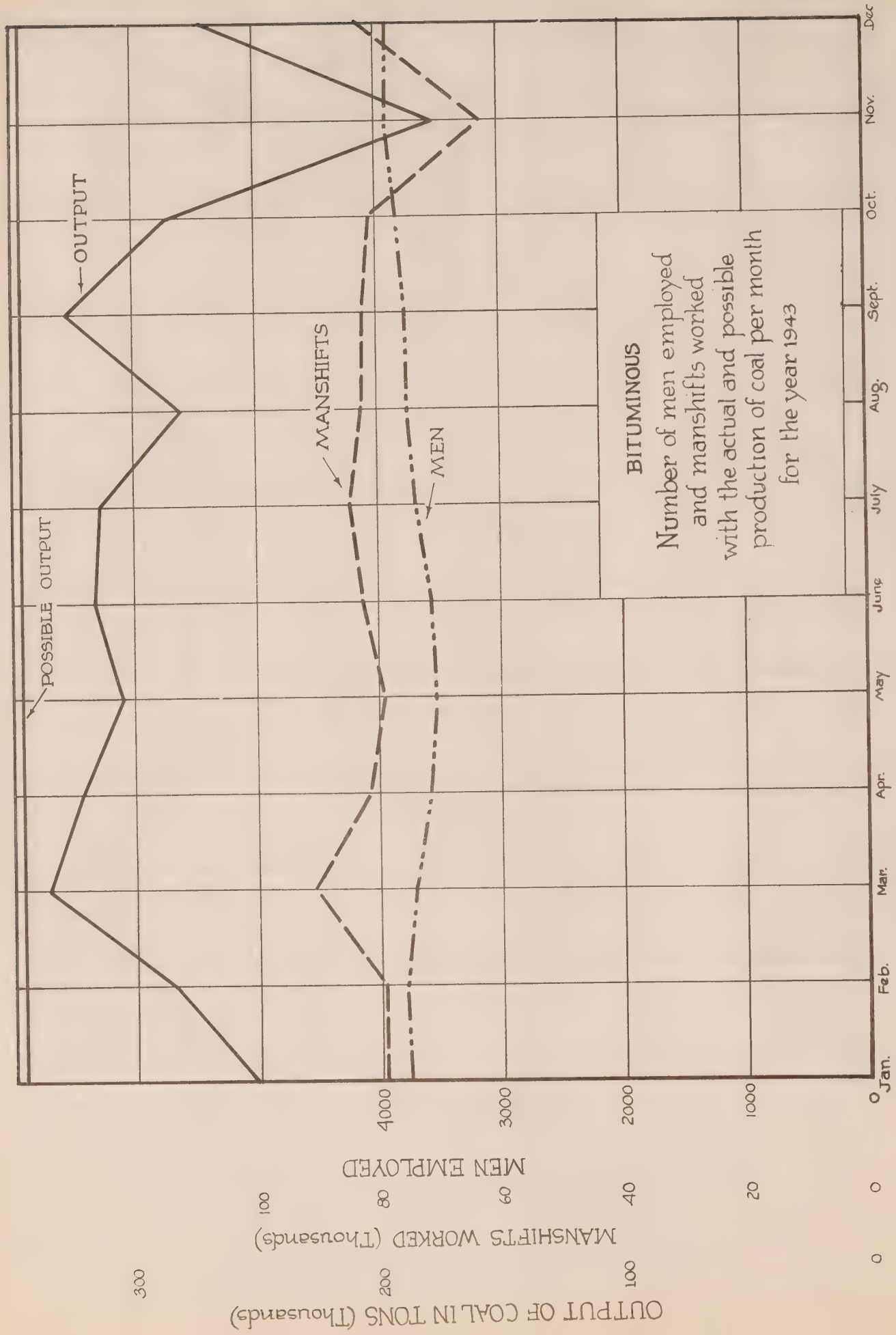




MONTHS

Prepared by MINES BRANCH, Dept. Lands & Mines

TECHNICAL DIVISION — Dept. Lands & Mines



MONTHS

TECHNICAL DIVISION — Dept. Lands & Mines

Prepared by MINES BRANCH, Dept. Lands & Mines

It must be further realized that although the mines reported a certain number of days worked, there were many cases, especially in the domestic field, where the men did not work full shifts. A glance at the graphs shows that in the domestic and sub-bituminous fields, there was a marked falling off in the number of days worked in the summer months, a condition which did not occur in the bituminous field. At the top of each graph the possible number of days that could have been worked in each month, is outlined, the difference between this and the actual being the time lost through lack of markets.

Attention should be drawn to the fact that a strike of from one to two week's duration, occurred during the month of November, resulting in a decrease in the number of days worked.

It should be noted here, that the figures for the number of days worked, given in this brief, are different from those given in the report of The Mines Branch for 1943. In The Mines Branch report for that year, averages were not weighted in accordance with the mines in each area, nor areas within a field.

Because the number of days worked only presents one side of the picture, and does not tell the number of men employed or shifts worked over these days, similar graphs were prepared to show the total man-shifts worked in the various fields. These are shown in Table 9 and Plate 13. Again the possible number of man-shifts that could have been worked if all men had been given full employment, is outlined at the top of each graph.

In determining the number of man-shifts that could have been worked, the largest number of men employed in any one month at each mine was ascertained. For example, if 20 men were employed in January, 18 in February and March, 10 in April, etc.; it was assumed that twenty men could be employed at that particular mine without increasing their present facilities, regardless of the fact that the owners might consider 25 or 30 men as a normal working staff. This was done for every mine within the Province. The total number of men in each field multiplied by the number of shifts in a year, divided by 12, gave the average number of man-shifts that could have been worked in any one month.

From Plate 13, one can readily see that full employment has not been attained in all three fields, even while our country has been at war. From unpublished figures for 1944, while we are still at war, the employment picture is even worse. How the industry is to employ returning veterans in addition to available labor will remain a problem until the industry has fuller access to Canadian or other markets. The markets are there if arrangements are made to make them available, and this can be accomplished only through the establishment of a long-term stabilized National Policy. From a recent survey, made in July 1944, the industry could absorb 2500 men to complete the staffs at various mines. This is a factor in the re-establishment of returning veterans, but if this number was absorbed without available markets, it would make conditions worse.

In order to determine the amount of coal that would probably be mined, if full time continuous employment was assured, and in view of the fact that different areas have different productive capacities, the possible tonnages for each area were calculated separately and totalled to give the possible tonnage for each field. The actual and possible tonnages that could have been attained are shown in Table 10 and Plates 14, 15, 16 and 17. Superimposed on the graphs are curves of man-shifts worked and the number of men employed.

TABLE 11

PER CAPITA PRODUCTION OF MINES IN THE PROVINCE.

Year	Gross tons of coal mined	Total Average No. of men employed	Tons of coal mined per man employed	Average No. of men employed underground	Tons of coal mined per man employed underground
1906.....	1,385,000	2,800	494	2,000	692
1907.....	1,834,745	3,600	509	2,700	679
1908.....	1,845,000	3,780	488	2,681	688
1909.....	2,174,329	5,207	417	3,893	566
1910.....	3,036,757	5,818	504	4,090	742
1911.....	1,694,564	6,689	253	4,517	375
1912.....	3,446,349	6,661	517	4,861	708
1913.....	4,306,346	8,068	533	5,837	737
1914.....	3,821,739	8,170	467	6,052	631
1915.....	3,434,891	6,445	532	4,493	764
1916.....	4,648,604	7,570	614	5,536	839
1917.....	4,863,414	8,310	595	6,047	804
1918.....	6,148,620	8,818	697	6,141	1,001
1919.....	5,022,412	7,573	663	5,150	958
1920.....	6,908,923	9,688	712	6,581	1,055
1921.....	5,937,195	10,018	592	7,203	824
1922.....	5,976,432	8,757	683	6,154	971
1923.....	6,866,923	9,927	687	7,249	893
1924.....	5,202,713	7,317	711	5,299	982
1925.....	5,883,394	8,774	670	6,498	834
1926.....	6,508,908	8,763	743	6,569	991
1927.....	6,936,780	9,016	768	6,681	970
1928.....	7,334,179	9,496	772	6,625	1,107
1929.....	7,147,250	9,572	747	7,115	1,004
1930.....	5,755,911	8,889	648	6,607	871
1931.....	4,563,309	8,070	577	5,969	701
1932.....	4,867,984	7,837	621	5,772	844
1933.....	4,714,784	8,042	586	5,937	794
1934.....	4,748,848	7,863	604	5,809	744
1935.....	5,462,973	7,800	700	5,644	969
1936.....	5,696,375	8,110	702	5,940	959
1937.....	5,551,682	7,836	708	5,806	956
1938.....	5,230,025	7,411	706	5,427	965
1939.....	5,518,105	7,456	740	5,517	1,000
1940.....	6,205,088	7,416	846	5,526	1,122
1941.....	6,970,064	7,714	903	5,652	1,233
1942.....	7,754,279	8,040	964	5,865	1,322
1943.....	7,677,982	8,636	889	6,197	1,160
1944.....	7,427,433	8,375	887	5,867	1,135

From the table, the production of coal for 1943 could quite as easily have been $10\frac{1}{2}$ as $7\frac{1}{2}$ million tons. Therefore, if the industry is expected to absorb a percentage of the returning veterans, which is only right, and full employment is to be given to all, then production in Alberta will be relatively higher and the need of additional outlets becomes more imperative.

In presenting the case for Alberta, it is not the desire to convey the impression that lack of markets was the sole factor why more man-shifts were not worked for the number of men employed. Other factors such as sickness, absenteeism, excessive income taxes, car and truck shortages, all had a bearing in reducing the total number of man-shifts worked. To complete the picture, two supplementary tables 11 and 12 are here presented.

The greatest number of men employed in any one month, by areas for the year 1943.
(Based on individual mines)

Domestic Field	No. of Men	Sub-Bituminous Field	No. of Men
<u>Area</u>		<u>Area</u>	
Ardley.....	41	Coalspur.....	765
Big Valley.....	38	Pekisko.....	17
Brooks.....	38	Pincher.....	3
Camrose.....	145	Prairie Creek.....	21
Carbon.....	157	Saunders.....	<u>134</u>
Castor.....	227		
Champion.....	35	Total per year.....	<u>1,040</u>
Drumheller.....	2,421		
Edmonton.....	909		
Gleichen.....	95		
Halcourt.....	23	<u>Bituminous Field</u>	
High Prairie.....	3	Cascade.....	324
Lethbridge.....	750	Crowsnest.....	2,284
Milk River.....	11	Mountain Park.....	939
Pakowki.....	4	Nordegg.....	<u>445</u>
Pembina.....	138		
Redcliff.....	44	Total per year.....	<u>3,992</u>
Rochester.....	26		
Sheerness.....	46		
Taber.....	213		
Tofield.....	122		
Wetaskiwin.....	7		
Whitecourt.....	<u>4</u>		
Total per year.....	<u>5,497</u>		

Elsewhere in this report, a classification has been put forward dividing the present classification of domestic, sub-bituminous and bituminous coals into five groups, numbered from one to five (see Plates 1 and 6). Group five of this classification is designated as a poor storage and shipping coal. Therefore, it seems desirable to state here that only about 10% of such coal is mined in the domestic field. The figures for the domestic field are as follows:

Group 3	-	581,107 tons
" 4	-	2,526,658 "
" 5	-	308,272 "
		<hr/>
		3,416,037 tons
		<hr/>

As the Alberta consumption of coal, exclusive of railway coal is $1\frac{1}{2}$ million tons, all of Group 5 and the lower grades of Group 4 could be used for home consumption, exporting the better grades of Group 4 and higher groups which have good shipping qualities.

Incidentally, much of this Group 5 coal is being shipped to British Columbia for immediate use.

SUMMARY -

In the exportation of coal, specific grades should be established similar to those in use for grain where No. 1 Hard wheat is known the world over and buyers buy grain on grade. However, grading is discussed later in this brief under "Standardization".

The complete graphical analysis of the Alberta coal industry presented in this section clearly discloses that the root cause from which all other disturbing factors radiate is "lack of markets". These factors include intermittent employment, efficiency of operation, underground maintenance as affecting the general condition of the mines and labor relationship, wages and other related matters. But, as clearly shown, there is no lack of markets. An existing large market needs only to be made available and this can be achieved only through the establishment of a sound national coal policy of long duration and subject to alteration only at widely separated, clearly specified times, by an Act of Parliament.



SECTION F
MINES AND EMPLOYMENT

T A B L E N O . 1 3

SUMMARY - PRINCIPAL COAL MINES - ALBERTA - GENERAL STATISTICS - 1941-42, 1942-43, 1943-44, INC.

COAL MINES

MINES						
1941-1942						
1942-1943						
1943-1944						
No. of Mines Reporting	-	-	-	-	-	-
No.	167	168	182			
Assets	38,392,885	41,925,310	44,182,211			
Liabilities	4,825,176	4,428,312	6,590,400			
Net Worth	33,567,709	37,496,998	37,591,811			
PRODUCTION						
Coal	6,650,080	7,460,484	6,990,519			
Coke	194,078	70,086	165,389			
Briquettes	133,082	162,578	130,282			
Miscellaneous	98	19,409	1,867			
Value of All Production	19,899,595	23,785,627	24,795,152			
Cost of Materials & Supplies Used in Production	2,487,181	2,647,627	2,837,872			
Cost of Fuel and Electricity Used	833,904	846,199	849,782			
Gross Sales	20,109,304	24,015,262	24,847,588			
No. of Employees	7,766	8,293	8,509			
On Salary	531	422	598			
Male	33	55	65			
Female	564	477	663			
Total	7,202	7,816	7,828			
On Wages	-	-	18			
Male	7,202	7,816	7,846			
Female	7,733	8,238	8,426			
Total	33	55	83			
Male	7,766	8,293	8,509			
Female	-	-	-			
GRAND TOTAL	12,964,629	15,118,698	15,799,660			
Salaries and Wages Paid	-	-	-			

TABLE NO. 14

WAGE RATES.

CLASSIFICATION	EDMONTON.		DUCHELLER		COALSPUR		CROWNEST		L'THBRIDGE	
	COAL AREA	AREA	COAL - AREA	AREA	COAL - AREA	AREA	COAL - AREA	AREA	COAL - AREA	AREA
Underground.	(Domestic)		(Domestic)		(Sub-bituminous)		(Bituminous)		(Bituminous)	(Domestic)
Contract Miners	-	\$4.00 - \$9.91 per day	\$5.00 - \$11.15	Per Day	\$4.11 - \$13.45	per day	\$7.55 - \$10.10	per day	\$6.00 - \$14.04	per day
Company Miners	-	\$4.71 - \$7.34 " "	\$7.28 - \$ 8.67 " "		\$7.34 - \$ 7.55 " "		\$ 7.16 - \$ 7.55 " "		\$ 7.34 - \$ 8.07 " "	
Drivers	-	\$5.28 - \$7.36 " "	\$7.02 - \$ 7.67 " "		\$7.16 - \$ 7.28 " "		\$ 7.16 - " "		\$ 7.28 - \$ 8.27 " "	
Bratticemen	-	\$7.34 - " "	\$7.34 - " "		\$7.55 - " "		\$ 7.55 - " "		\$ 7.34 - " "	
Pumpmen	-	\$6.62 - \$7.33 " "	\$7.28 - \$ 7.34 " "		\$7.28 - " "		\$ 6.67 - " "		\$ 5.95 - \$ 6.62 " "	
Labourers	-	\$5.66 - \$7.28 " "	\$6.62 - \$ 7.34 " "		\$6.62 - \$ 7.21 " "		\$ 6.67 - " "		\$ 6.20 - \$ 7.34 " "	
Fire Boss	-		\$7.34 - \$ 8.38 " "		\$7.07 - \$ 8.02 " "					
Pit Boss	-	\$140.00-\$260.00 " mo.	\$167.44-\$284.00 " mo.		\$250.00-\$270.00 " mo.		\$233.93-\$262.93 " mo.		\$202.56-\$225.00 " mo.	
Tracklayers	-		\$7.34 - " Day				\$ 7.55 - " day		\$ 7.34 - \$ 9.50 " day	
Timbermen	-	\$6.62 - \$7.34 " day	\$7.28 - \$ 7.34 " "		\$7.23 - " day		-		\$ 7.34 - \$ 9.50 " "	
Machinemen	-		\$7.57 - \$ 9.18 " "		\$7.55 - \$ 8.11 " "		-		\$ 7.34 - \$ 9.50 " "	
Aboveground.										
Labourers	-	\$4.60 - \$6.92 " "	\$5.00 - \$ 7.12 " Day		\$6.00 - \$ 7.55 " day		\$ 6.67 - " day		\$ 6.39 - \$ 6.42 " day	
Coal Loaders	-	\$4.16 - \$6.39 " "	\$6.62 - \$ 7.12 " "		\$6.40 - \$ 8.37 " "		\$ 6.67 - \$ 7.16 " "		\$ 6.39 - \$ 7.12 " "	
Machinists	-		\$5.80 - \$20.00 " mo.		\$6.62 - \$15.20 " "		\$ 7.16 - \$ 7.65 " "		\$ 7.32 - \$ 7.54 " "	
Carpenters	-	\$7.12 - \$8.40 " "	\$7.12 - \$ 7.54 " Day		\$7.60 - \$11.27 " "		\$ 7.16 - \$ 7.65 " "		\$ 7.54 - \$ 7.97 " "	
Blacksmiths	-	\$7.33 - \$7.55 " "	\$7.30 - \$ 7.54 " "		\$7.54 - \$ 9.27 " "		\$ 6.67 - \$ 7.66 " "		\$ 7.02 - \$ 7.54 " "	
Engineers	-	\$5.37 - \$7.50 " "	\$7.50 - \$ 7.59 " "		\$7.11 - \$11.68 " "		\$ 7.16 - \$10.42 " "		\$ 7.12 " "	
Hoistmen	-	\$5.63 - \$7.33 " "	\$6.41 - \$ 7.64 " "		\$7.11 - \$ 7.97 " "		\$ 7.16 - \$ 7.71 " "		\$ 3.90 - \$ 7.59 " "	
Tipplemen	-	\$4.56 - \$5.92 " "	\$5.15 - \$ 7.50 " "		\$6.57 - \$10.21 " "		\$ 6.67 - \$ 7.34 " "		\$ 6.39 - \$ 7.27 " "	

GENERAL STATISTICS - 1943 - 1944.

	EDMONTON		DUCHELLER		COALSPUR		CROWNEST		L'THBRIDGE	
	COAL AREA	AREA	COAL AREA	AREA	COAL AREA	AREA	COAL AREA	AREA	COAL AREA	AREA
	(Domestic)		(Domestic)		Sub-bituminous	Bituminous	Bituminous		Bituminous	
Number of Mines	22	24	6	7	6	8	8	182	6,990,519	8,509
Coal Production (Tons) ..	330,378	1,508,493	727,982	1,800,439	887,563	515,185	1,253,520	\$ 15,799,680		
Number of Employees (No.)	496	2,002	691	2,202	890	665				
Salaries & Wages (\$)	\$ 794,098	\$ 3,639,303	\$ 1,513,642	\$ 4,203,703	\$ 1,902,165					

(Includes all employees of coal mines, and total salaries and wages paid, does not however compare with supplementary statistics in this connection, as the latter did not include executive and higher paid officials, etc.)

TABLE NO. 15

[illegible]

COAL AREAS BY LOCALITIES:	1943																								1944																								TOT. AVER. EMPLOY- EES	SALARIES & WAGES PAID:
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		Total (12 mos.)	(area)																								
	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.	Male No.	Total No.			Male No.	Total No.																						
Ardley	2	2	-	-	2	2	6	6	9	9	15	15	24	25	22	23	21	22	21	22	20	21	19	20	21	20	21	11,381																						
Big Valley	14	14	11	11	13	13	13	13	17	17	15	15	20	20	20	20	26	26	18	17	17	17	12	19	21	21	21,969																							
Brooks	9	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	42,118																							
Canrose	47	48	47	41	48	48	49	49	52	52	53	53	59	60	65	66	70	71	70	70	66	66	58	59	58	58	93,097																							
Carbony	7	7	55	55	57	57	69	69	56	56	74	74	86	86	89	89	89	89	77	77	67	67	61	61	76	76	91,128																							
Canada	296	299	299	302	297	300	304	307	318	321	321	324	316	319	315	318	318	321	315	318	313	316	309	311	813	813	678,400																							
Cantor	24	24	17	17	21	21	35	35	52	52	56	56	59	59	76	76	101	102	98	100	84	86	76	77	56	56	70,900																							
Champion	13	13	13	13	14	14	18	18	16	16	16	16	20	20	22	22	22	22	21	21	23	23	21	21	19	19	19,944																							
Crownpoint	615	631	608	622	628	642	662	635	656	658	658	666	684	699	744	759	740	756	745	763	727	747	709	725	673	673	1,294,942																							
Crownsnest	2093	2109	2071	2087	2080	2096	2090	2098	2114	2119	2135	2169	2185	2213	2228	2209	2224	2212	2227	2199	2214	2209	2224	2165	2165	4,203,405																								
Drumheller	1740	1750	1666	1678	1749	1759	1849	1861	1911	1923	1951	1963	1996	2010	2080	2094	2140	2156	2162	2031	2046	1724	1738	1945	1945	3,975,951																								
Edmonton	3990	3991	321	323	368	364	403	405	423	425	442	443	497	499	565	567	635	637	622	624	589	582	516	517	476	476	7,200,421																							
Elsterton	13	13	10	10	13	13	18	18	20	20	19	19	18	18	19	20	20	21	22	23	22	23	19	19	18	18	26,499																							
Halocourt	4	4	-	-	-	-	2	2	3	3	4	4	6	6	10	10	11	11	10	10	4	4	5	5	7	7	5,597																							
High Prairie	-	-	-	-	-	-	2	2	3	3	4	4	6	6	10	10	11	11	10		1	1	-	-	-	-	1,582																							
Ridgeview	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																							
Richbridge	586	594	582	590	579	587	601	609	622	630	646	655	670	678	685	695	711	719	702	711	682	691	628	646	651	651	1,216,301																							
Rockyview	9	9	9	9	10	10	9	9	10	10	9	9	10	9	10	9	9	9	9	9	9	9	8	8	8	8	2,167																							
Mill River	844	847	820	825	847	851	873	877	892	897	894	898	900	904	923	926	919	922	921	920	924	928	863	864	886	886	1,975,165																							
Mountain Park	422	425	422	425	422	425	422	425	433	436	432	435	426	429	438	441	442	443	435	435	443	456	443	446	456	700	700																							
Takowit	12	12	10	10	9	9	10	10	10	10	11	12	11	12	13	13	12	13	15	16	13	14	15	14	13	13	15,622																							
Pekisko	1	1	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	300																							
Penblina	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	640																							
Pindhar Creek	29	29	32	32	35	35	34	34	35	35	36	36	39	39	40	40	39	39	41	41	38	38	19	19	32	32	31,162																							
Redoliff	29	29	32	32	35	35	34	34	35	35	36	36	39	39	40	40	39	39	41	41	38	38	19	19	32	32	46,643																							
Rockhelter	2	2	3	3	3	3	2	2	3	3	3	3	3	3	4	4	16	17	18	19	12	12	6	6	9	9	3,016																							
Saunders	111	111	111	111	107	107	104	104	112	112	110	110	109	109	113	113	120	120	128	128	120	120	129	129	115	115	238,954																							
Shermans	22	22	15	15	17	17	18	18	18	18	21	22	21	22	22	24	26	25	27	27	25	25	27	28	25	25	26,162																							
Taber	11	11	12	12	16	16	16	16	15	17	18	18	21	22	22	24	26	25	27	27	25	25	27	28	25	25	26,162																							
Tofield	84	84	80	80	80	80	80	80	84	84	84	84	88	88	88	88	88	88	88	88	88	88	88	88	88	88	1,400																							
Wetaskiwin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	177																							
Whitecourt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	592																							
Other Areas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																							
TOTAL	7415	7476	7168	7228	7363	7426	7627	7689	7828	7890	7980	8045	8257	8328	8670	8742	8942	8919	8860	8941	8540	8621	7990	8059	8175	15,317,379																								

Differences in Statistical Reports caused by errors
and also the inclusion of Working Proprietors, etc.

GRAND-TOTAL.

ANALYSIS OF WAGE EARNERS BY MONTHS AND BY PER CENTAGE OF TOTAL

1942	Male No.	Female No.	Total No.	Per Cent of average Total (8114)	
				Less	Greater
April.....	7415	61	7476	7.87	-
May.....	7168	60	7228	10.92	-
June.....	7363	53	7426	9.48	-
July.....	7527	62	7689	5.53	-
August.....	7828	62	7890	2.76	-
September.....	7980	65	8045	-.68	-
October.....	8267	71	8338	-	2.64
November.....	8670	72	8742	-	7.74
December.....	8842	77	8919	-	9.92
1943					
January.....	8860	81	8941	-	10.19
February.....	8940	81	9021	-	6.25
March.....	7930	69	8009	-	-.68
Average.....	8046	69	8114		
Differences between numerical					
average & average as shown on reports.....					61
Other differences.....					334
TOTAL AVERAGE LESS.....					4509

*The above is calculated on the "total area" average as shown on reports rather than on the straight numerical average as it gives a better picture of the "individual area".

MAN DAYS WORKED IN THE COAL MINES OF ALBERTA, 1938-1944
(Dominion Bureau of Statistics)

<u>Year</u>	<u>Surface</u>	<u>Underground</u>	<u>Total</u>
1938	469,649	1,021,028	1,490,677
1939	468,815	1,069,076	1,537,891
1940	495,711	1,174,035	1,669,746
1941	545,053	1,325,361	1,870,414
1942	640,690	1,484,472	2,125,162
1943	675,349	1,501,884	2,177,233

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TABLE NO. 16

TONNAGE LOST - COAL MINES - ALBERTA.

YEAR.	PER CUNT PRODUCED.	PER CUNT LOST.	- PER CENT AGE LOST THROUGH -					OTHER CAUSES.		TOTAL.
			ABSENTEEISM	LACK OF ORDERS	CAR SHORTAGE.	WINE DISABILITY	%	%	%	
1938	67	33	0.6	31.7	-	0.4	0.3			33
1939	71	29	0.5	28.2	-	0.2	0.1			29
1940	76	24	0.8	22.8	-	0.3	0.1			24
1941	83	17	1.6	13.6	1.0	0.5	0.5			17
1942	88	12	3.9	6.3	0.1	0.7	1.0			12

No definite figures are available in this respect, but the Dominion Bureau of Statistics issued recently a table of percentages, which is now given, of what this means as far as the production of coal in Alberta is concerned:-

Briefly, Alberta in times of depression would lose nearly 2,000,000 tons of coal annually, in times of prosperity or emergency, about 1,000,000 tons annually.

MINES AND EMPLOYMENT

Summary of statistics collected by the Alberta Provincial statistician for the fiscal year ending March 31, 1944 with comparative annual summaries for the years 1941-42. 1942-43 and 1943-44.

The following statistics, Tables 13 to 16, were collected from the operators of coal mines in Alberta by means of schedules specifically outlined to reveal certain information for the administration and regulation of certain provisions in the Industrial Wages Security Act, Cap. 281 -- RSA 1942, and the Department of Trade and Industry Act, Chap. 14 -- RSA March 31, 1942. By reason of this fact, the statistics thus shown are not comparable with others issued by the Alberta Department of Lands and Mines and the Dominion Bureau of Statistics for the respective calendar years. They are also subject to the limitations of war-time conditions affecting completeness, accuracy and coverage.

The statistics in Table 13 were collected from 34 coal areas of which ten are bituminous or sub-bituminous, the remainder being lignite or domestic. The greater part of the production comes from the former because this coal is harder and has a greater BTU content, but the latter can register a very high heating value which is much appreciated especially in the local market. Both, however, are popular in the export market.

The capital investment in Alberta's coal mines totals about \$40,000,000 and the industry employs more than 8,000 persons of whom less than 100 are females. The annual payroll amounts to between \$12,000,000 and \$15,000,000.

The Crow's Nest Pass area led production in Alberta for the year ending March 31, 1944 with a production of nearly 1,900,000 tons and salaries and wages paid were in proportion. This area is a feeder for the railways and export markets especially in the north-west United States. A significant factor is that the production comes from only seven mines while in the Drumheller area, which was the next largest producer, 24 mines produced 1,600,000 tons. The combined total of these areas accounts for nearly half of Alberta's production and employ more than 4,000 persons with salaries and wages of more than \$7,800,000.

The Mountain Park and Coalspur areas range high in the scale of values, their combined production equalling that of Drumheller although there are only twelve mines in these two areas. Next comes Lethbridge with production of 500,000 tons from eight mines employing 665 persons and paying wages and salaries of more than \$1,200,000. The remaining areas follow with smaller returns.

The rates of wages paid in Alberta vary with the type of field. As a rule, higher wages are paid in the bituminous and sub-bituminous mines. See Table 14.

No industry of similar capitalization in Alberta employs as many wage earners as the coal industry but the situation has changed somewhat during the past ten years due to the installation of new highly powered machinery and the general advancement made in labor-saving devices.

The least productive months of the year in the coal mines are from April to September and the most productive from October to March with the peak of employment occurring in January. See Table 15. Loss of production through lack of orders, absenteeism and certain minor causes for the five-year period 1938 to 1942 inclusive, is illustrated in Table 16.



SECTION G
COAL MARKETS

MARKETS.

The extent and stability of the market is the pivot around which the welfare and future of Alberta's coal industry revolves.

The quantity available may be described, for all practical everyday purposes, as unlimited. The quality is satisfactory by the same test of practical usefulness. The Canadian market alone is such, that present production could be doubled and the increase readily absorbed, provided that this market could be opened to Alberta coal by the lowering of the barrier incidental to the distance between the source of production, the mine in Alberta, and the great, and presently closed, area of the Canadian market, Ontario and Quebec.

It is here held that this barrier should be overcome in the National interest and as a measure of economic justice to Western Canada.

The National interest, apart from the strictly economic sense which is dealt with elsewhere, has been in the past and is again to-day highlighted by the exigencies in time of War. In the War years 1914-18 the welfare of Canadian citizens and industry were in jeopardy through disturbances to coal production in the United States. We are vulnerable to the same risks to-day.

At the moment reliable press reports (1) place the United States deficit at 40,000,000 of bituminous and 6,000,000 tons of anthracite. 10,000,000 of the bituminous deficit will come out of stock piles but the balance, 30,000,000 tons, will need to be trimmed from domestic and industrial consumers. It is proposed to reduce anthracite quotas from $87\frac{1}{2}\%$ to 80% of 1941 consumption to meet needs for this fuel. American Solid Fuels Administration for War tabulation reveals 400 plants with less than 15 days' supply. The American mine labour week at 54 hours is already 4 hours greater than that of Great Britain and cannot be stretched further. Any extensive stoppage of work in U.S. coal fields could not help but have most serious repercussions in Canada particularly in times such as these. With the best of good-will in the world the first duty of United States authorities in emergency or dire need will be to protect their own public and industrial needs.

It is surely short sighted and an invitation to disaster to place unbalanced dependence on the good-will of the United States, who may be themselves powerless to help us, for supplies of such vital necessity when we have the means, though sound fostering, to develop our own supplies from sources of practically unlimited capacity to serve our needs. Sources, moreover, which are well inland and thus in a measure protected even from some of the dangers of war.

To illustrate further: In the Toronto area for some years prior to the outbreak of the present War the amount of public moneys paid out for fuel by the Municipal Welfare Departments, ran into hundreds of thousands of dollars annually. Apart from local handling charges this money went to the United States to pay for American mined coal and to American railwaymen for hauling it to the Canadian border. So we had this situation: The Canadian Government was sending Canadian dollars across the line to assist in keeping employed American miners and railwaymen, thereby keeping them off the public relief rolls in their own country, while Canadian miners and other classes of labour that could have mined in Canada and transported this same amount of coal to Ontario, were idle and in many instances had to be cared for by public welfare organizations in our own country. Canada was certainly very generous. We were, by sending moneys across the line for coal, relieving the United States Government of the /cost of keeping

TABLE 18

DISTRIBUTION OF COAL SALES OUTSIDE ALBERTA

1934 - 1943 INCLUSIVE

The following received shipments principally from the following coal areas

	PER CENT OF <u>TOTAL SALES</u>
<u>British Columbia</u> - Coalspur, Crowsnest, Drumheller, Lethbridge, Mountain Park, etc.....	6.00%
<u>Saskatchewan</u> - Carbon, Coalspur, Crowsnest, Drumheller, Lethbridge, Pembina, Redcliff, Saunders, Sheerness, Tofield etc.	19.92%
<u>Manitoba</u> - Cascade, Coalspur, Crowsnest, Drumheller, Lethbridge, Mountain Park, Saunders, etc.....	8.00%
<u>Ontario</u> - Coalspur, Crowsnest, Drumheller, Lethbridge, Prairie Creek, Saunders, Railway Companies re-shipped coal from other fields	4.50%
<u>United States</u> - Crowsnest, Drumheller, Lethbridge, Mountain Park, etc.....	1.33%
<u>Railway Companies</u> - Cascade, Coalspur, Crowsnest, Mountain Park, Nordegg, Prairie Creek, etc.....	36.74%
* <u>Ships' Bunker</u> - Crowsnest, Mountain Park .....	.09%
<u>TOTAL</u>	<u>76.67%</u>

Classification

Bituminous fields - Cascade, Crowsnest, Highwood, Nordegg, Mountain Park.
Sub-Bituminous " - Coalspur, Morley, Pekisko, Pincher, Prairie Creek,
Saunders.

*Shipments only commenced in the year 1943

TABLE NO 19
SALES OF ALBERTA COAL BY POINTS OF DESTINATION
1934 - 43 Inc.

YEAR	Ships' Bunkers	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	N. W. T.	U. S. A.	Railway Companies	Reshipped by Rwy. Co. to Ontario	Total	Alberta	Other Alberta	Total
	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons	Tons
1934		127,638	1,087,698	986,639	391,132	55,947	31	13,739	1,687,850	37,837	4,350,874	1,087,698	3,262,976	4,350,874
Per Cent of Total 1935		2.93	25.00	22.69	8.99	2.16		.36	37.32	120.00	15.00	75.00	100.00	100.00
		221,758	1,246,599	1,120,816	435,813	64,639		24,712	1,960,355	57,688	5,075,272	1,246,599	3,828,313	5,075,272
Per Cent of Total 1936		4.37	24.57	22.08	8.59	2.41		.49	37.49	100.00	24.57	75.43	100.00	100.00
		244,928	1,356,690	1,238,730	450,740	65,066		27,397	1,969,569	67,339	5,353,940	1,356,690	3,997,250	5,353,940
Per Cent of Total 1937		4.57	25.34	23.14	8.42	2.49		.51	35.53	100.00	25.34	74.66	100.00	100.00
		269,023	1,325,054	1,085,812	437,594	62,821		41,328	2,028,389	71,306	5,251,163	1,325,054	3,925,109	5,251,163
Per Cent of Total 1938		5.12	25.25	20.68	8.34	2.55		.79	37.27	100.00	25.25	74.75	100.00	100.00
		238,435	1,278,932	1,011,207	413,663	74,111		32,507	1,871,852	69,769	4,920,790	1,278,932	3,641,658	4,920,790
Per Cent of Total 1939		4.85	25.59	20.55	8.41	2.92		.66	36.62	100.00	25.59	74.01	100.00	100.00
		239,227	1,241,618	1,044,367	409,046	90,208		33,139	2,109,684	145,355	5,167,287	1,241,618	3,925,669	5,167,287
Per Cent of Total 1940		4.63	24.03	20.21	7.92	4.56		.64	36.71	100.00	24.03	75.97	100.00	100.00
		237,642	1,311,644	1,019,035	354,857	135,987		35,334	2,727,753	136,838	5,812,926	1,311,644	4,501,282	5,812,926
Per Cent of Total 1941		4.09	22.55	17.53	6.11	8.13		.61	40.98	100.00	22.55	77.45	100.00	100.00
		304,928	1,335,606	1,092,913	430,663	234,606		39,742	3,090,290	491,950	6,481,748	1,335,606	5,146,142	6,481,748
Per Cent of Total 1942		4.70	20.61	16.24	6.64	11.21		.51	40.09	100.00	20.61	79.39	100.00	100.00
		682,222	1,474,795	1,269,669	580,336	231,258		98,197	2,884,586	295,598	7,171,063	1,474,795	5,696,268	7,171,063
Per Cent of Total 1943		9.10	20.57	17.71	8.09	7.35		1.36	35.82	100.00	20.57	79.43	100.00	100.00
	49,298	864,911	1,560,212	1,455,612	627,368	1,190		414,627	2,098,535	9,916	7,071,753	1,560,212	5,511,541	7,071,753
Per Cent of Total TOTAL - 10 Yrs.	.70	12.23	22.06	20.58	8.87	.16		5.86	22.54	1,589,616	56,656,826	22.06	77.94	100.00
	49,298	3,400,712	13,220,406	11,284,800	4,531,572	1,555,616	210	753,742	22,103,103	(Less adjustment...)	56,656,816	13,220,408	43,436,408	56,656,816
Per Cent of Total	.09	6.00	23.33	19.92	8.00	4.59		1.33	20,816,287	36.74	100.00	23.33	76.67	100.00

(* 1938 reports - 4,920,800)

thousands of their citizens on public welfare and at the same time paying out hundreds of thousands of dollars in order to maintain Canadian citizens on relief in this country. What was true of the Toronto area applied equally to other Canadian districts in like need in those years.

The growth and development of Alberta's coal industry from birth to the end of 1944 is depicted in Table No. 3. Since 1886, a total of 204,000,000 tons valued at \$628,000,000, have been produced. This production has made a substantial contribution to employment of Canadian workmen and enhancement of Canadian wealth over the years. Note, however, the anomalous situation, that during the depression years when the need for Canadian production and employment was greatest, the production of Alberta mines was at its lowest ebb in 25 years.

The coal produced in Alberta has been marketed in the period 1915-43, inclusive, as shown in Table 7.

The coal produced, as to principal areas and mines in Alberta, 1934-43 inclusive, is shown as per Table 17.

Of the 39 coal producing areas in the Province for the ten year period 1934-1943, 5 may be classed as Bituminous, 6 as Sub-bituminous and the balance of 28 is often described as domestic coal. The bituminous and sub-bituminous areas are located on the eastern slope of the Rocky Mountains and the lignite is found in the remainder of the areas. Of the coal produced and sold, about 54 per cent is bituminous and sub-bituminous and 46 per cent lignite or domestic. The sales of bituminous and sub-bituminous amount to 89 per cent of the amount of production, with corresponding figures of 98 per cent for lignite or domestic, making a sales average, 93 per cent of total production for the ten-year period. It should be taken into account, however, that out of the immense mineable reserves of 46,000,000,000 tons, less than the average of 6,000,000 tons were sold and produced annually in 6 of the 10 years mentioned.

A ten year survey covering the years 1934-43, inclusive, showing the distribution of sales outside Alberta, as from the different producing areas within the Province and by percentage as to markets is given in Table 18.

A progressive analysis of this ten year sale period, covering production and sales destination, both in tonnage and percentage, is given in Table 19.

Alberta Sales-

It will be noted from sales tables that domestic requirements absorb approximately one quarter of the total production. Apart from disturbance to normal markets through War conditions, local usage, in total tonnage has been fairly constant and may be expected to remain so. Moderate growth in demand, through increasing population, will be subject to offset from competitive fuels such as natural gas and residual fuel oil abundant in this Province. Large scale industrial development or extensive uses of coal for synthetic products is hardly to be expected to create material additional markets for some time to come, although these have wide possibilities and are worthy of every encouragement.

British Columbia-

The market for Alberta coal in our neighboring Province to the West has remained fairly steady at about 5% of production and at approximately 250,000 tons per annum, prior to War years. It is now considerably above this figure to meet British Columbia's need for fuel in absence of normal supplies of oil and wood fuels available to that market in time of peace. It is expected with the passing of War emergencies that sales of Alberta coal in this market after an expected recession during the reconstruction period, will revert to and be maintained at about pre-War levels.

Saskatchewan-

The market for Alberta coal in Saskatchewan has for many years been in the close neighborhood of 1,100,000 tons per annum. In War years, for large military camps and for industrial purposes and for enhanced supplies to more prosperous domestic users it has reached higher figures. Saskatchewan lignite fields may be expected to fill an expanding area of the available market in that Province and under normal years Alberta sales in this territory may find it hard to exceed or even hold pre-War levels.

Manitoba-

Previous to the outbreak of War Alberta coal sales in Manitoba from a high peak of 612,542 tons in 1927 were on a declining scale to a low figure of 354,857 tons in 1940. Since then War needs and interruption to other sources of supply have raised total shipments to 1943 figure of 627,368 tons. With the passing of these special conditions the Manitoba outlet for Alberta coal may be expected to decline. The principal cause is again the expansion and development of the lignite fields of Saskatchewan. This coal is readily mineable, of fairly satisfactory quality for many industrial and heating needs and with advantage of proximity to market is, and may be expected to continue, displacing a material tonnage of Alberta coal.

Ontario and Quebec-

As the situation existed prior to the outbreak of the present world War, and as it most likely will prevail upon conclusion thereof, it would appear the principal substantial expansion of markets for Alberta coal lies in Ontario and possibly a portion of Quebec. In spite of many handicaps, - distance and uncertainties as to freight rates and subventions to be dealt with elsewhere, - Alberta coal was slowly gaining a foothold in this market and was making accelerated progress when shipments to this territory were stopped through War conditions, making it difficult to transport our coal Eastward and necessary to divert, under Dominion Coal Control Orders, production from Alberta mines to serve other market needs.

The position of the Alberta coal movement to the Ontario market in the typical years 1939-40 was as follows:

Tonnage moved in 1939 and 1940.

<u>1939</u>	<u>Tons</u>	<u>Per Ton</u>	<u>Subvention Paid. Amount.</u>
P.C. 740 (Domestic)	91,493	\$ 2.50	\$ 228,739.70
P.C. 3970 (Industrial)	1,336	1.71	2,633.68
P.C. 3970 (Railway)	<u>142,532</u>	<u>1.88</u>	<u>268,295.77</u>
Total	235,361	\$ 2.12	\$ 499,669.15

<u>1940</u>	<u>Tons</u>	<u>Per Ton</u>	<u>Amount.</u>
P.C. 740 (Domestic)	150,164	\$ 2.50	\$ 375,418.27
Industrial	9,495	1.79	17,000.38
Railway	<u>312,766</u>	<u>1.90</u>	<u>593,318.83</u>
Total	472,425	\$ 2.08	\$ 985,737.48

It will be noted that the increased tonnage to Ontario for 1940 over 1939 amounts to 237,064 tons or slightly over 100 per cent.

The amount paid in subventions on coal shipped to Ontario from Alberta increased from 500,000.00 in 1939 to \$986,000.00 in 1940. It should be observed that the bulk of this increased movement covered coal used by the railways or in other words, bituminous coal.

The Subventions.

We ship coal to Ontario from Alberta under the provisions of Order-in-Council P.C. 7588, dated October 1st. 1941, (which rescinded Orders-in-Council P.C. 740 of the 24th. day of April, 1933, and P.C. 3286 of the 4th. day of January, 1939) as amended by P.C. 9794 of the 16th. day of December, 1941, and as amended by P.C. 4740 of the 5th. day of June, 1942, which provide among other things:

1. For a subvention of \$2.50 per net ton and applies to points in Ontario to which the tariff freight rate in effect at the time of shipment is eight dollars or in excess thereof which would include most of Ontario approximately East and South of Lake Nipigon.
2. For a subvention of the difference in amount between the laid down cost of U.S. coal and Alberta coal shipped direct to consumers at points of consumption in Ontario approximately West of Lake Nipigon but subject to a maximum of 25% of the tariff freight rate in effect at the time of shipment.
3. For a subvention of 30% of the effective tariff freight rate at time of shipment to dealers for resale in that territory of Ontario approximately West of Lake Nipigon subject to a maximum payment of \$2.00 per net ton.

4. For a subvention of 25% of the effective tariff rate to Ontario points on coal for railway use subject to a maximum of \$2.00 per net ton.

Most of the coal shipped under P.C. 740, and section 4 of P.C. 7588 carrying the straight \$2.50 per ton subvention has been for domestic use. It is this movement in particular that it is desirable to further encourage. The matter of how much domestic coal we can put into Ontario under existing conditions depends mainly on the price factor; in other words, the relative prices of anthracite, coke, pocahontas coal and Alberta coal.

Relative Prices.

To understand the matter of relative prices on Alberta as compared with American anthracite or coke, it may be explained that Alberta coal costs the dealer in Ontario the same price in all parts of the Province. This is not the case with anthracite or other imported fuels. Toronto may be taken as the place where the minimum price in the Province exists for these fuels. This is due to the splendid dockage facilities there for the handling of imported fuels brought in from the United States by water route. However, when one leaves the Toronto area and starts inland, he finds, due to the rail haul, that the price of American coal increases to the dealer and to the consumer. Here are some of the instances:

Relative Retail Prices (1939-40)

Toronto

American anthracite	\$13.75
By-products - Coke	11.50
Pocahontas (used extensively for domestic purposes)	11.25
Alberta Drumheller Furnace Lump	12.15

It will be seen that the margin in favour of Alberta in the Toronto area as compared with anthracite is only \$1.60; with coke it is 65¢ higher, and with pocahontas 90¢ higher.

On the other hand it will be observed that at Peterborough some distance inland, the prices range as follows:

Anthracite	\$15.00
Coke	14.50
Pocahontas	14.00
Alberta	12.00

The margin here in favour of Alberta coal against anthracite is \$3.00, against coke \$2.50 and against Pocahontas \$2.00.

This margin increases as one gets further north into Ontario until at Timmins, for instance, the prices are:

Anthracite	\$19.00
Coke	18.00
Pocahontas	16.50
Alberta	13.50

It will be observed from the above that the price of Alberta coal is also higher at Timmins than in Toronto, but this is due to the fact that dealers there demand a larger gross margin than the dealers in Toronto, although the coal costs them the same laid in their yards as in Toronto. But, the retail price of anthracite is very much higher than in Toronto, giving to Alberta a favourable price differential of \$5.50 a ton.

Comparison in Tonnages.

By reason of the marked price differential in favour of Alberta coal at Timmins, we place considerable Alberta coal in that area. For instance, the City of Timmins with the Towns of Schumacher and South Porcupine, all of which really constitute the one area, purchased 30,791 tons of Alberta coal during the year 1940. The population of this area might be compared to Brantford, but in that city only 996 tons were marketed.

ONTARIO MARKET CONDITIONS - 1943

There has been no Alberta coal movement into Ontario since October 1st, 1942, excepting a very small tonnage into the extreme northwestern section of the Province.

The price on Drumheller furnace lump at the time the shipments to the east were suspended was \$4.15. The freight rate is \$5.50, making a laid down price in dealers' yards at any point in Ontario of \$9.65.

Dealers in the cities and the larger towns work on a gross margin of \$3.00 per ton. This then meant that the consumer price at most points in Ontario was from \$12.50 to \$12.65 per ton.

If Alberta coal was being shipped to Ontario today, due to increases allowed by the Wartime Prices and Trade Board, the price on Drumheller lump would be \$13.00 - \$13.15 per ton for the reason that an increase of 50¢ per ton is permitted the mines.

The prices today on American Anthracite and American Pocahontas are as follows:

	<u>Anthracite</u>	<u>Pocahontas</u>	<u>Alberta</u>
Toronto	\$15.50	\$13.00)	(if shipment possible)
Barrie	16.50	14.00)	
Brantford	16.00	13.75)	
Brockville	16.00	-)	
Carleton Place	16.50	14.00)	
Collingwood	16.50	14.00)	
Fort William	16.80	12.25)	
North Bay	17.25	15.00)	
Niagara Falls	15.00	-)	\$13.00
Oshawa	16.00	14.00)	
Owen Sound	16.50	14.00)	to
Peterborough	16.75	13.50)	
Port Hope	16.00	13.50)	13.15
St. Catharines	15.75	13.75)	

TABLE NUMBER 20

BITUMINOUS COAL IMPORTED INTO CENTRAL CANADA

FROM THE UNITED STATES (SHORT TONS) 1920-41

Year	Ontario	Quebec	Total
1920	12,336,903	3,503,410	15,840,313
1921	10,709,746	2,684,566	13,394,312
1922	9,447,593	1,316,669	10,764,262
1923	14,068,002	2,922,991	16,990,993
1924	10,737,848	1,525,516	12,263,364
1925	9,884,710	2,530,661	12,415,371
1926	11,696,108	1,253,246	12,949,354
1927	13,158,927	1,572,692	14,731,619
1928	14,536,099	1,303,607	15,839,706
1929	13,067,713	831,296	13,899,009
1930	11,955,589	1,111,811	13,067,400
1931	9,315,172	858,015	10,173,187
1932	6,913,221	470,781	7,384,002
1933	7,067,289	433,706	7,500,995
1934	9,238,409	659,566	9,897,975
1935	8,682,867	459,761	9,142,628
1936	10,756,073	645,006	11,401,079
1937	11,164,259	1,139,641	12,303,900
1938	8,850,635	594,712	9,445,347
1939	8,695,365	1,105,590	9,800,955
Average of 20 years ending 1939			12,000,000
1940	11,875,089	1,471,968	13,347,057
1941	14,731,647	2,996,545	17,728,192

	<u>Anthracite</u>	<u>Pocahontas</u>	<u>Alberta</u>
St. Thomas	\$16.00	\$13.50)	
Stratford	16.50	13.00)	
Windsor	16.00	13.00)	

It must be noted that the Dominion Government is subsidizing American Anthracite to the extent of 70¢ per ton. If this subsidy were not being paid, the retail price on Anthracite in Ontario would be 70¢ higher than shown in the above list.

The extent of the Central Canada market is revealed by Table 20 showing the imports of American bituminous coal in recent years.

This is the market which Alberta coal would and could acceptably serve if assisted to overcome the distance barrier. In the filling of this market by Alberta coal, the real interest of Ontario and Quebec marches with our own, inasmuch as every Canadian dollar remaining in circulation in Canada, whether as wages to a miner or as railway revenue, helps to provide a Canadian Market for the industrial production of Ontario and Quebec.

American Market -

There has always been a small amount of Alberta bituminous coal marketed in the adjoining States of the Union.

See Table 7 and Plate 11. Owing to the disruptions of war interfering with the usual supplies of American coal to this area, it has been possible by joint arrangement between Canadian Coal Control and the American Co-ordinator of Solid Fuels to moderately increase Alberta shipments to such markets during these war years. This is a temporary movement. In this area in the past they have welcomed Canadian coal when supply was short but when their own coals become plentiful, barriers of one description or another have restricted the free entrance of Alberta coal. The control of such movement rests in large measure with the U.S. Interstate Commerce Commission, which can be, and sometimes have been, quite arbitrary in the issue of regulations unfavorable to Canadian coal when they consider the circumstances so warrant. The U.S. Tariff Board can levy regional tariffs, if they so desire, and through this means one particular State may receive greater protection from Canadian imports than another if that particular state feels that it is being adversely affected by the entry of, say, foreign coal for instance and appeals for protection by such federal means. The difficulties and contingencies inherent in this position have precluded the building up of a stable normal outlet for Alberta coal in these adjacent and natural markets for the product of our mines.

As U.S. coal will in all likelihood for years to come enjoy a substantial share of the Canadian market in Eastern Canada, it would appear equitable and feasible for a Dominion - United States reciprocal agreement to be reached whereby Alberta coal in quantity might be supplied to the adjoining western American market. An exchange of tonnage would alleviate geographic difficulties in reaching suitable markets for both countries. A quota system of this nature would appear desirable from the Canadian standpoint and if made effective would become a dependable contribution towards the steady and profitable utilization of Alberta's coal resources.

Railway Market -

It will be noted from Table 7, that our Canadian railways have in the past been the greatest and most stable market, year in and year out, for Alberta coal. Great and stable as this market has been, it is our considered view that this market is capable of absorbing still larger tonnage and on a firmer basis than in the past.

A glance at the map of Alberta, Plate 6, will show that the main lines of the C.P.R. lie in the Southern part of the Province and procure their coal needs from the mines on their lines in that area and in like manner the C.N.R. are served in the central and northern part of the Province from mines on their lines.

It will be noted from Table 7, that railway requirements were on a rising scale in the years 1939-41, attributable to the effect of subventions on the movement of railway coal into Western Ontario. Alberta coal, speaking generally, was being used on the C.P.R. for a considerable distance beyond Winnipeg but the C.N.R. had made no serious effort to use this coal East of Winnipeg, although subventions placed the same on a proper competitive basis as far as Sioux Lookout.

Late in 1942 the Coal Controller was faced with the need of supplying a new market arising in the Western States and Provinces, particularly in British Columbia, in connection with War needs, and so commenced a period of allocation during which the railways were compelled to procure coal from U.S. sources for Eastern railway needs and the policy of taking coal east of the Saskatchewan boundary was sharply curtailed and was later stopped.

With the return of normal conditions it may be expected that the market for railway coal formerly enjoyed by Alberta mines can be regained. It can, and further should, be capable of expansion through the use by railways of Alberta coal further afield on their extensive systems. This could be brought about by the active interest and sympathetic support of the railways, which they might properly be encouraged to extend in their own interest. Such expansion would be productive of extensive revenue producing tonnage and a contributing factor to the prosperity of the territories they serve. A strong Dominion policy to foster the Canadian Coal Industry in the national interest would be a compelling incentive to the two great railways, in themselves national in scope, to both use Alberta coal in their own operations and to aid by suitable and reasonable freight rates in the wide extension of the markets for all types of Alberta's coal production.

Under a firm long term Canadian policy on subventions, dealt with elsewhere, not only could the railways extend their use of railway coal, but this coal could be taken from the mines on a steady year round basis. This would promote regularity of employment and stability of income for the miners, promoting industrial peace in the Industry. Steady production would also allow economies in operation, in turn reflected by stabilized or reduced prices.

It has been customary for the railway companies to place orders for coal requirements - "at pleasure". The late Mr. Justice A.A. McGillivray in an

TABLE NO 21

SHIPMENTS OF ALBERTA COAL TO RAILWAYS

BITUMINOUS COAL AREA:	C. F. R.										TOTAL-10 YRS. Tons
	1934 Tons	1935 Tons	1936 Tons	1937 Tons	1938 Tons	1939 Tons	1940 Tons	1941 Tons	1942 Tons	1943 Tons	
Cascade	118,632	99,570	105,577	114,566	100,654	103,578	118,346	180,468	172,221	175,958	1,286,560
Arrow Head	666,498	905,272	892,119	914,122	870,311	973,085	1,168,722	1,464,578	1,378,563	990,304	10,162,592
TOTAL	785,130	1,004,849	997,696	1,028,688	970,965	1,078,663	1,288,079	1,645,041	1,550,784	1,166,262	11,450,152
BITUMINOUS COAL AREA:	C. N. R.										TOTAL-10 YRS. Tons
	1934 Tons	1935 Tons	1936 Tons	1937 Tons	1938 Tons	1939 Tons	1940 Tons	1941 Tons	1942 Tons	1943 Tons	
Mountain Park	524,654	526,642	530,807	616,857	514,926	633,569	879,584	860,962	772,440	591,633	6,391,274
Worlegg	124,943	132,618	138,391	129,620	131,174	128,637	201,395	289,502	262,889	194,927	1,725,301
TOTAL	649,597	659,255	669,398	746,487	646,100	762,206	1,079,979	1,150,464	1,035,329	786,560	8,116,575
RAILWAYS:	TOTAL										TOTAL-10 YRS. Tons
	1934 Tons	1935 Tons	1936 Tons	1937 Tons	1938 Tons	1939 Tons	1940 Tons	1941 Tons	1942 Tons	1943 Tons	
Canadian Pacific Railway	785,130	1,004,849	997,696	1,028,688	970,965	1,078,663	1,288,079	1,645,041	1,550,784	1,166,262	11,450,152 (58.49%)
Canadian National Railway	649,597	659,255	669,398	746,487	646,100	762,206	1,079,979	1,150,464	1,035,329	786,560	8,116,575 (41.51%)
TOTAL - BITUMINOUS COAL AREAS	1,434,727	1,665,104	1,667,094	1,775,175	1,617,065	1,840,869	2,368,058	2,795,505	2,586,113	1,952,822	19,576,727 (100.00%)
TOTAL - ALBERTA COAL SHIPMENTS TO - RAILWAYS	1,687,850	1,960,855	1,969,569	2,028,389	1,871,852	2,109,684	2,720,793	3,090,290	2,864,586	2,098,535	22,402,103
PER CENT - BITUMINOUS COAL OF TOTAL ALBERTA COAL SHIPPED TO RAILWAYS	85.00%	84.92%	84.64%	87.52%	86.39%	87.26%	86.81%	90.46%	90.29%	87.34%	87.39%
AVERAGES:											
	1934 Tons	1935 Tons	1936 Tons	1937 Tons	1938 Tons	1939 Tons	1940 Tons	1941 Tons	1942 Tons	1943 Tons	
Monthly Highest Shipment of Bituminous Coal Shipped to Railways	154,593	168,175	183,942	162,704	176,402	225,959	236,519	281,600	271,691	186,315	204,790
Monthly Lowest " " " " "	85,730	109,871	111,004	116,028	110,390	120,412	168,948	187,576	165,887	86,488	126,233
Monthly Mean Average " " " "	119,560	128,759	138,925	147,931	134,755	138,405	196,838	232,939	215,526	152,735	163,139

exhaustive study of the situation of the bituminous mines supplying the railways in 1939-40 pointed this out as a weakness to effective operations, both as against the mines and as against the interests of the workmen, in that it did not permit steady operation and employment.

It was Mr. Justice McGillivray's recommendation that through co-operation of the railways that long term contracts be arranged, coal not immediately required going into strategically located stock piles. This recommendation remains sound today and should be implemented, once the exigencies of War are out of the way.

RAILWAY COAL -

Western bituminous mines in Alberta and Eastern British Columbia are now producing at the rate of $4\frac{1}{2}$ million tons per year. At present, working time is not more than five and one half days per week at most mines, and at some mines not even that. In the post-war period it would certainly not be reasonable to assume any greater working time.

The Railways are now using close to 4 million tons on western lines. From the records of the past it would not appear that much reduction will take place in immediate post-war years. Even allowing there may be some reduction, a policy for stabilizing could be worked out.

If Canadian Government policy would effectuate a plan whereby the two Railways would guarantee to take from Alberta and Eastern B.C. mines a definite tonnage of $3\frac{1}{2}$ millions per year for 10 years, divided as to Canadian Pacific - two millions, and Canadian National $1\frac{1}{2}$ millions, this would provide for four days' work per week as an average for all mines.

The railways would be able to balance consumption against purchase by adding to or taking from stockpiles, or in the case of too heavy surplus by extending the use eastward in the head of the Lakes area, if necessary by Government assistance. At least six to nine months' requirements should be placed in emergency reserve. With this as a sound basis, industrial and other needs would take care of the balance of the week provided subventions were re-established on a long term basis for the Ontario market, to provide the same competitive condition for our mines as existed prior to the outbreak of the War. This would permit mines to plan their future operations without the uncertainties that have previously existed.

The allocation of coal to the railways with very few exceptions is automatic, as the coal areas supply the branch of the railways contiguous to the coal mines.

The fluctuating conditions as to production it would be most desirable to improve are illustrated in accompanying Table 21.

MARKETS-GENERAL

It is apparent from the foregoing that the material expansion of Alberta coal markets on which the growth and prosperity of the industry will depend, rests upon entering to a greater extent than hereto fore the Ontario

TABLE NO. 22

COAL PRODUCTION - CANADA

(The following figures published by the DOMINION BUREAU OF STATISTICS do not conform exactly to Provincial figures but are close enough to be acceptable.)

	<u>1942</u>	<u>PER CENT OF TOTAL</u>	<u>1943</u>	<u>PER CENT OF TOTAL</u>	<u>1944</u>	<u>PER CENT OF TOTAL</u>
	(tons)	(%)	(tons)	(%)	(tons)	(%)
<u>CANADA:</u>						
Nova Scotia	7,204,852	38.19	6,084,297	34.20	5,808,792	33.93
New Brunswick	435,203	2.31	372,322	2.10	347,032	2.03
<u>TOTAL - EASTERN CANADA:</u>	<u>7,640,055</u>	<u>40.50%</u>	<u>6,457,219</u>	<u>36.30%</u>	<u>6,155,824</u>	<u>35.96%</u>
Manitoba	1,265	.01	999	.01	-	-
Saskatchewan	1,301,116	6.90	1,672,370	9.40	1,390,155	8.12
Alberta	7,754,053	41.10	7,658,234	43.06	7,437,781	43.46
British Columbia	2,188,541	11.42	1,997,740	11.22	2,134,248	12.47
<u>TOTAL - WESTERN CANADA:</u>	<u>11,224,975</u>	<u>59.50%</u>	<u>11,329,343</u>	<u>63.70%</u>	<u>10,962,184</u>	<u>64.04%</u>
<u>TOTAL - CANADA</u>	<u>18,865,030</u>	<u>100.00%</u>	<u>17,786,562</u>	<u>100.00%</u>	<u>17,118,008</u>	<u>100.00%</u>

and Quebec markets, an increase in the use by our railways of Alberta coal, and entry to the available market in the adjoining States of the Union.

The solution to the latter lies in arrangements between Canada and the United States as friendly nations trading together and developing such trading along lines of mutual advantage.

The barrier to be overcome in expansion of railway usage and to more effectively reach the Ontario and Quebec market is the distance and the solution lies in a favourable freight rate, supported as necessary by permanent subvention arrangements.

The same conditions, in general, apply to expansion of the market for Nova Scotia coal within Canada. Coal production in Canada, as between the principal producing areas, for the recent years 1942-44 inclusive, is shown on Table No. 22.



SECTION H
FREIGHT RATES AND SUBVENTIONS

Each of the studies made of Alberta's coal industry, over the past quarter century, have arrived at the barrier of distance between the mines in Alberta and the large potential Canadian markets. Each have recommended that this handicap be overcome by assistance in the shape of reduced freight rates; - by railway co-operation; and contribution towards payment of freight charges by Dominion Government subvention.

Negotiations for special rates on Alberta coal commenced in 1922-23 at which time it was hoped that the matter would be dealt with by Parliament by way of the establishment of a Statutory rate as a precedent for which the Crows' Nest Pass grain rate is an outstanding example of the benefits to both the industry and the transportation companies. Unfortunately, this was not done. The matter was referred to the Board of Railway Commissioners, as to a fact finding body, with the request that they report back to the Government on what they considered the out-of-pocket cost to be. The Board's function was not to fix a rate but to endeavour to find a cost. Much argument was heard pro and con, the railways being on the defensive, apparently through fear of having to adjust many other rates should a favourable tariff be established for coal. In general, however, the attitude of the then President of the Canadian National Railways, the late Sir Henry Thornton, was favourable to special treatment for coal. Before a Senate Committee established to study the fuel supply of Canada he made some significant statements - the following are examples:

Senate of Canada, Report of the Special Committee

on the Fuel Supply of Canada. The Hon. J.S. McLennan,
Chairman.

Sir Henry Thornton, March 21, 1923.

P.52 Q. by Hon. Mr. Casgrain. "Under most favourable circumstances what would a ton of coal cost per mile?" A....."I could give you an answer to that a little later, with a little figuring, but of course a great deal depends on what you bring into the cost.I can give you - and prove - any transportation cost you want at any time for any purpose, and so can anyone else."

P.53 Q. Hon. Mr. Laird. "Is that same method of railway cost of transportation extended into all other classes of freight as well?" A. "Oh, it is the most difficult question - to be really quite honest, and not try to fool anyone - it is the most difficult question in the world to answer. For example, take a train; you can haul 18 cars of freight from A to B just as cheaply as you can haul 15 cars; I defy anyone to find in the expenses the additional cost of adding two cars to the average train, almost anywhere. The same thing is true of a passenger train; it does not cost one penny more to haul a passenger train full of people than it does to haul it empty. With your freight, the only point where it tells is when you get to the engine load; if your engine will haul only 20 cars and you put on 21 cars or 25 cars, it means that you have one train of 20 cars, right up to the capacity of the engine, and then you have got to run another train of five cars, which is only a fourth of the capacity of the next engine. So when you begin to discuss the question of what it costs to move traffic you can be led into all sorts of highways and by-ways, and get all mixed up.".....

P.56 Answering a question by the Chairman."Let us take this coal proposition. We might be justified in making a very, very low price on coal in order to foster industry in the central regions, and then we would make enough out of the products of the industries, out of the increase of population, out of the general prosperity of the community, to compensate us for handling the coal at a low price."

P.57 Q. by Hon. Mr. Gordon."Do you not think there is a great, special reason why coal should be put into a class by itself and transported more cheaply than any other commodity?" A."I do not know that I should like to single out coal and say that that is always entitled to more consideration than, let us say, wheat or something else; But I will answer your question by saying that certainly coal is the very breath of industry and that we are justified in doing almost anything to put ourselves in possession of a reasonably cheap fuel supply not only of coal, but also of substitutes for it, like electricity."

In reviewing the history of these freight rate negotiations of the past, it is interesting to note that an experimental rate was voluntarily implemented in July, 1923, by the Canadian National Railway (only) of \$7.00 per ton for the movement of 4,000 tons. - No subvention was paid. In August 1923 a special rate of \$9.00 was provided by the C.N. Ry. to apply on any additional movements beyond 4,000 tons - No subvention paid. In September, 1923, a \$7.00 rate was again effected by the Canadian National Railway for a further experimental lot of 10,000 tons. - No subvention. Similarly

In 1925 - \$7.00 for movement of 25,000 tons.

1926 - \$9.00 for movement of 1,987 tons.

No subventions.

The special experimental rates were established at the instance of the Alberta Government or the Ontario Government, or both.

FREIGHT RATES.

In 1926, upon joint application of Ontario and Alberta, the Dominion Government requested the Board of Railway Commissioners for Canada to inquire into and report upon the costs of moving coal from producing points in Western Canada to consuming points in Ontario. These costs were to be the "out of pocket cost" as well as a cost "inclusive" of maintenance and like charges and a cost also to include the element of profit.

The Board majority, two members, found these costs to be: (1)

- | | |
|-----------------------------------|-----------------|
| (1) Out of pocket cost | \$7.22 per ton. |
| (2) "Inclusive" cost | 10.07 per ton. |
| (3) "Inclusive" cost, plus profit | 12.20 per ton. |

The minority report, written by the late Honourable Frank Oliver, found: (1)

- | | | |
|-----|------------------------------|--|
| (1) | Out of pocket cost | \$6.50 per ton |
| (2) | "Inclusive" cost |) Unable to draw definite conclusions from evidence submitted. |
| (3) | "Inclusive" cost plus profit | |

In review, the Board admit their difficulties in arriving at a firm basis on which to base such rates; as these quotations evidence: (2)

"There is no formula measuring the necessary and proper relation between out of pocket costs and operating costs. The only information which the Board has before it is that supplied by the railway. Consequently, it would appear to be justifiable to make use of the ratio between out of pocket, or additional cost and inclusive cost, which the railway itself presents in the figures submitted."

"An estimate of railroad costs is of necessity a very technical matter in regard to which only the accounting department of the railways themselves have information."

The Honourable Frank Oliver in his summary of evidence and conclusions states: (3)

"In the summing up herein of admitted out-of-pocket costs the Canadian Pacific Railway rate from Knee Hill to Toronto is placed at \$6.37 per ton; which for the actual haul of 2,127 miles is equal to a shade under 30 cents a ton per 100 miles. The Canadian National Railway Rate from Drumheller to Toronto is placed at \$6.03 per ton. The average of the rates of the two systems, therefore, would be \$6.20. Adding 30 cents a ton for the additional haul necessary to reach all Ontario points, Nipigon, Nakina and easterly -- would give a blanket rate of \$6.50 a ton. This rate should in my opinion also cover points in Quebec within 100 rail miles from Ottawa; and also points on the National Transcontinental and branches in northern Quebec eastward to, and including, La Tuque."

"As Montreal, the principal coal consuming point in the province of Quebec, is a very short distance beyond the suggested range of distribution from Ottawa under the blanket rate, and as Quebec city, the second greatest coal consuming point in the province, is no further by rail from the coal mines than Montreal, an additional 25 cents a ton might in my opinion be made to cover that part of the province of Quebec not covered by the \$6.50 rate, to extend as far eastward as, and including, Levis and Diamond Junction."

The balanced reasoning of the Honourable Frank Oliver as to the underlying equity of special rates for Canadian coal is as sound today as when it was written nearly twenty years ago. He said: (4)

"The difference in value of any commodity at two separated points is the

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| (1) | Judgments and Orders The Board of Railway Commissioners of
Canada, Vol. XVII, Sept. 22, 1927 | P.441 |
| (2) | do. | P.449 and P. 453. |
| (3) | do. | P.462 |
| (4) | do. | P.464 and 5. |

reason for its movement from one point to the other. If the cost of moving is greater than the difference in value, the commodity cannot and does not move. On articles of manufacture in producing which skilled labour forms a large part of the cost the difference in value between the points of production and consumption is usually very considerable, and a comparatively high transportation rate can be paid. On the other hand the raw materials upon which skilled labour is employed and the food, fuel and other prime human necessities required by that labour are of comparatively low initial values in proportion to tonnage; and the lower their cost when they reach the point of consumption the better the opportunity that is offered for the successful employment of skilled labour. If the railroads charged the same rates on hides and wool or on flour and coal as are willingly paid on boots and blankets the hides and wool would have cost too much to be made into boots and blankets, there would be no workers to buy and use flour and coal, and consequently no traffic for the railway. Therefore railway rates are not and cannot be based on a uniform per ton per mile cost. In fixing the rate to be charged for transporting any particular commodity between any two points there must always be a question of judgment, first, as to what are the out-of-pocket costs to be covered, and second, how much of the overhead, that is, superintendence, maintenance, general expenses, etc., should be covered by that particular traffic over and above out-of-pocket costs. If a certain traffic can pay more than its per ton share of the gross overhead it may fairly be required to do so. On the other hand if a certain movement is for good and sufficient reasons desirable the fact that the rate which will allow it to be moved is not sufficient to bear its full per ton share of the gross overhead does not debar such a rate from being installed. This is the principle upon which railway freight rates are classified and numbered from one to ten. It is the chief reason why certain commodities pay double and the first-class rate while other articles are carried at what is called a "commodity rate" which may be less than that of the lowest or 10th class. Tenth class freight pays approximately one quarter as much per ton for a haul of the same mileage as first class, and 5th class approximately half as much."

"The capital investment in the railroads and their equipment has been made. It is considered better to have that equipment fully employed in productive and constructive traffic even at rates that do not in themselves show a profit, rather than let it be idle or partly idle because of lack of productive traffic that cannot move because the rate will not permit."

In dealing with the financial importance of coal movement to Canada at that time, the views of this Western pioneer and Canadian patriot are well worthy of renewed and serious attention. May we be permitted to further quote from the report: (5)

"Canada imported from the United States in 1926, 2,584,000 tons of anthracite at a cost of \$20,852,000, if the figures of the Canada Year Book are correct. The cost at point of purchase was roughly \$8 a ton. To this must be added the average cost of transportation to the Canadian boundary. Of the total amount of anthracite imported from the United States not less than two million tons found its market in Southern Ontario and in the city of Montreal.

"Alberta has coal in unlimited quantity and of a quality particularly well suited for the domestic needs that are now supplied by anthracite. No coal moves, or can move, from Alberta to Ontario to compete with United States anthracite at present rail rates. The railroads agree that they have equipment now idle during six months of every year to enable each to haul a million

(5) Judgments and Orders The Board of Railway Commissioners of Canada, Vol. XVII. September 22, 1927. P 467

tons of coal from Alberta to Ontario within the six months period. Assuming that Montreal and Southern Ontario take two million tons of United States anthracite a year and that the Canadian railroads get an average of \$1.50 per ton for hauling it, their total earning is \$3,000,000. Canadians of Southern Ontario and Montreal pay to United States miners 16 million dollars for 2 million tons of anthracite coal, plus the cost of haul to the boundary, and then pay Canadian railroads, say, 3 million dollars for distributing it.

"At an average f.o.b. cost at the mine in Alberta of say \$3 50 per ton with a rail rate of \$6.50 there would be a distribution of \$20,000,000 of Canadian money amongst Canadians for the same service.

"Having the necessary equipment on hand to move the coal, the railways could not fail to benefit both directly and indirectly from the movement even though the rate did not pay the per ton per mile share of overhead of either of the two systems. There would seem to be at least as good reason for hauling domestic coal from Alberta to Ontario at a rate that would yield less than "inclusive" costs, as there is for hauling passenger, express and mail trains over the same tracks under similar conditions."

As precedingly noted, the Board of Railway Commissioners in their majority report found as the out-of-pocket cost of moving Alberta coal to the Ontario market the average figure of \$7.22 per ton. During the subsequent test periods from 1928 to 1932 inclusive under Order-in-Council P.C. 439 dated March 16, 1928, coal moved to Ontario points under a temporary rate of \$6.75 per net ton in respect to which the Dominion Government paid the difference between the temporary rate and tariff rate. The railways subsequently agreed to the establishment of a special rate of \$8.00 per net ton from coal originating stations in Alberta to stations in Ontario to which the normal rate was \$8.00 per net ton or in excess thereof in relation to which Order-in-Council P.C. 740 dated 24th. April, 1933, provided for a subvention of \$2.50 per net ton for shipments Eastward up to and including, but not beyond, Ontario.

In 1932 the question of the freight rate on Alberta coal again received attention and on recommendation of the Minister of Mines the Government instructed the Board of Transport Commissioners of Canada, under Order-in-Council P.C. 1179 of May 18, 1932, to report to the Government what is the out of pocket cost per ton to the railways of carrying coal from Alberta to North Bay and Toronto in the Province of Ontario. The terms of reference are significant and fairly explicit : (1)

"The Committee of the Privy Council, on the recommendation of the Minister of Mines, advise, - in view of the fact that any improvement in Canada's coal situation whereby a greater quantity of Canadian produced coal may be used, rests entirely on the question of what it costs to carry this coal by rail, and in view of the fact that during the last nine years the Government has facilitated trial shipments of coal by granting financial assistance whereby many thousands of tons of Canadian coal have been moved into markets otherwise unattainable, - that from the information gained in the above mentioned shipments and from any other source considered dependable, the Board of Railway Commissioners be instructed

- (1) Report of the Board of Transport Commissioners for Canada to His Excellency the Governor in Council, February 1, 1933. Page 1.

to report to the Government what is the out-of-pocket cost per ton to the railways of carrying coal from Alberta to North Bay and Toronto, in the province of Ontario."

The finding, based on the movement of coal in 1931, was:- (1)

"The Board certifies to the Minister of Mines as the out-of-pocket cost from Alberta to:-

- | | |
|---------------|-----------------|
| (a) North Bay | \$6.16 per ton. |
| (b) Toronto | 6.88 per ton. |

Attached hereto are the reasons and calculations upon which the above conclusions are based.

(Sgd.) Chief Commissioner
and other Members."

The calculations to reach these figures included the cost of returning all cars used as empties, overruling the contention of the provinces that such costs should not be included.

If the freight charge against Western coal is to be loaded with the cost of haulage of empties back from the East and to the Western mines, in other words if this space has been bought and paid for by either the mine or the purchaser of the coal, would it not be correct to assume, that, as of right, a reduced rate should be granted on the use of this space for shipments of other goods from the East back to the mines and thus equitably reduce cost of supplies to mines and miners in Alberta?

The evidence showed that generally, old, small, box cars not suited for other traffic are used at all seasons of the year for the transportation of the coal. With special cars of larger capacity the expense ratio should be lessened to a marked degree.

In 1932 finding of the Board of Transport Commissioners did not result in an alteration of the previously adopted basic rate of \$8.00 per ton which remains in effect to date. The conclusions from the reviews of both 1926 and 1932 have always been questioned in Alberta and it is held that a thorough investigation, in the light of present day operating efficiency and particularly on a solid trainload basis using modern cars and locomotives, would reveal a substantially lower cost unit.

While the rate itself is open to question the paralyzing weakness, in both freight rate and subvention features of the plan, lies in the fact that it is not a permanent or stable arrangement. Moreover any alternative implemented should not only be of a permanent character but should also provide a measure of flexibility in order to be able to meet changed or emergency conditions immediately. It is true that the present arrangement has gone on from year to year and is still in effect (subject to temporary curtailment as to certain shipments under orders of the Coal Administrator) but it is not a basis on which to build either an increasing production or a sound marketing programme.

At the present time and, in fact, during the entire period of the movement of Alberta coal to Ontario, we have been dependent on the whim and fancy of the railroads and the Government of the day at Ottawa as to the continuance of the transportation of it to Eastern Canada. To repeat our rate is as follows:

To the Railroads	-	\$8.00 per ton
To the Mines	-	5.50 per ton

The difference between the amount the railways receive and the amount the mines

actually pay, viz. \$2.50, is paid by way of subvention by the Dominion Government.

The \$8.00 rate to the railways is purely a volunteer rate and it could be withdrawn by them at any time. It is not a rate ordered by the Transport Commission or by the Parliament of Canada.

Similarly, the \$2.50 per ton subvention is provided by order-in-council, although the required monies are voted each year by Parliament. This could be revoked at any time.

The extreme diffidence of the mine operator to undertake heavy capital expenditures under the handicap of such uncertainties will be readily understood. Such expenditures and investment are necessary in either opening new works or to modernize for efficient operation present mines. They cannot be made with reasonable regard to safety of the funds involved unless there is assurance of the long term stability of access to markets.

Working under these uncertain conditions there has also not been an incentive for Alberta mines to undertake the expenditure of any great amount of money in developing the Ontario market. For instance, one or more mines have expressed themselves as ready to erect large storage facilities in Toronto where Alberta coal could be shipped in the early part of the fuel season and stored from which Toronto retail dealers could obtain their supplies in a manner similar to that employed in the distribution of American fuels. And it may be noted that the Toronto area constitutes approximately one third of the coal consumption of Ontario.

In this connection it might be explained that importers of various types of American coals carry large stocks on the coal docks and retail dealers within a radius of twenty miles thereof draw from these stocks anywhere from one to ten or more tons at a time as occasion demands. The advantage of this system is quite evident. There are three hundred retail coal dealers in Toronto, many of which are small concerns. Under city regulations a dealer, in order to obtain a license to operate, must possess a business site, a scales, covered storage, delivery facilities and at all times have at least thirty tons in storage. Many dealers have no more capital tied up in coal than the price of one car of thirty tons. As orders come in from customers the dealer does not diminish his stock on hand; he simply sends his truck down to the dock to fill the current demands of his customers. He has practically no financing to do.

On the other hand, if he wants to handle Alberta coal, he has to tie up at a minimum \$386.00 a car. This is made up as follows: 40 tons of lump at, we will say, \$4.15 per ton, F.O.B. the mine in Alberta, \$166.00; freight on 40 tons at \$5.50, \$220.00; a total of \$386.00.

It is quite apparent, therefore, that there is not any very great incentive to the retail dealer in the Toronto area to stock Alberta coal under these conditions. If he could secure it at the docks in a ton or two at a time as he can with imported coals, he would feature it and do a great deal to promote its sale. This desired arrangement can be brought about only by one or two of the Alberta mines joining together and providing covered storage facilities on the docks as is done by the importers of foreign coals. But as already stated, Alberta mines can not undertake an expenditure of this type when there is no definite assurance that the Government at Ottawa will continue its payment of subventions or the railways continue to haul the coal from Alberta to Ontario at \$8.00 per ton.

Shipments to Quebec -

If the present freight rate of \$5.50 per ton - that is \$5.50 after the subvention

of \$2.50 has been paid by the Dominion Government - or even a lower rate can be made permanent, or for even a ten year period, it should also be extended to apply to a certain area in the Province of Quebec. There would, of course, arise the question of the extent of that area. It could scarcely be expected that Alberta coal could have the same rate as far east as Gaspe, for instance. It should have the same rate, however, into the Noranda-Malartic area of Quebec and to Montreal. As a basis of reckoning the distance into Quebec on which the Ontario rate should apply, the following yardstick might be employed.

In using this yardstick the endeavour is to point out that on the mileage basis the haul on coal from Alberta to Montreal and to the Noranda-Rouyn-Val d'Or mining areas in northwestern Quebec is not as great as it is to Windsor in southwestern Ontario, to which point our \$5.50 rate applies, and that when dealt with on a mileage basis the interprovincial boundary should not constitute a barrier.

For instance, on a C.P.R. haul, coal coming to Windsor or any other point in Ontario or Quebec must pass through Sudbury. We can take Sudbury, therefore, as a C.P.R. distributing point for Eastern Canada. The railway mileage from there to Windsor is 485 miles. The mileage from Sudbury to Montreal is only 437 miles, a shorter distance by 48 miles. If we have a \$5.50 rate to Windsor, why should we not have it to Montreal?

Again dealing with the C.P.R. Lines, the distance from Sudbury to Noranda in northwestern Quebec is only 304 miles, 181 miles shorter than the haul from Sudbury to Windsor.

It would seem reasonable to have the same \$5.50 rate to Noranda.

From Noranda on to the Val d'Or and the Malartic area in Quebec is a matter of an additional haul of only 60 miles, or 364 miles from Sudbury as compared to 485 miles of a haul to Windsor.

It is contended that a rate of \$5.50 to the Val d'Or-Malartic mining camps should apply.

In a similar manner comparisons can be made with C.N.R. haulages. In their cases take two such points as Ontario distributing centres, viz. Capreol and Cochrane; the former for the diverting of coal cars going to points in which is commonly referred to as old Ontario as well as for coal that would be consigned to Montreal.

The mileage from Drumheller, Alberta, to Cochrane, which is the junction point with the Temiskaming and Northern Ontario is 1559 miles. The distance from Cochrane over the T. & N.O. to Noranda in northwestern Quebec is 156 miles, making a total haulage from Drumheller to Noranda of 1715 miles.

It is interesting to compare this mileage with that from Drumheller to Windsor by the C.N.R.'s own through line via Longlac and Capreol. This entails a haul of 2191 miles, being 485 miles greater than the haul to Noranda. Notwithstanding this, Alberta coal has had the \$5.50 rate to Windsor and has not been granted a like rate to Noranda.

Coal coming into the Malartic-Val d'Or area of northwestern Quebec is hauled by the C.N.R. on their main line through Cochrane to Senneterre, 184 miles east of Cochrane, and then on down to Malartic. This distance from Drumheller to Malartic is 1796 miles. This again is around 400 miles shorter than to Windsor where the \$5.50 rate applies.

It seems reasonable, therefore, that Alberta coal should have the \$5.50 rate to certain areas in Quebec, particularly so where the mileage is shorter than to certain points in Ontario which take this rate.

The Basic Freight Rate.

As to the sufficiency of the basic \$8.00 per ton freight rate, Alberta to Ontario, it is our regret that we cannot submit authoritative data. The Railway companies are the only people who have access to all the figures covering the cost of the railway operation, and a complete understanding of them (if such a thing is possible). It is respectfully suggested that your Commission might explore this matter fully with the Railways.

The railways might be asked to consider in particular, and discuss before your Commission, the possibilities for cheaper transportation costs through moving coal in solid trains in cars of special type. It is understood that such practices have been developed and used to marked advantage in moving similar products in the United States. The shipment of coal in long straight hauls, say from Alberta to Ontario, would seem especially susceptible to economies through this method.

As to the importance of coal haulage, as a whole, to the Canadian railways there can be no question. In total tonnage transported it equals grain, for which, as mentioned, a special statutory rate structure has been established. As a native product essential to both the industrial and public welfare of the Canadian people it is felt that coal in all counts merits the same consideration.

Comparison of coal with grain is shown on Table 23.

TABLE 23

REVENUE FREIGHT LOADED BY CANADIAN RAILWAY SYSTEMS

DOMINION BUREAU OF STATISTICS

Millions of Tons

<u>Calendar Years</u>	<u>Grain and Their Products.</u>	<u>Coal and Coke</u>
1926	19.9	24.3
1929	18.8	24.4
1932	16.4	14.4
1937	10.4	17.4
1938	14.4	15.1
1939	17.4	17.2
1940	16.8	19.3
1941	22.3	21.9
1942	20.3	25.4
1943	26.9	27.3
Total	183.6	206.7
Average	18.3	20.6

TABLE NO. 24

COAL SUBVENTIONS -- DOMINION OF CANADA

Tonnage and Subventions paid - Movement of Coal - Under Assisted Rates

<u>DOMINION OF CANADA</u>			
<u>YEAR</u>	<u>TONS</u>	<u>PER TON</u> \$	<u>SUBVENTION</u> \$
1928	146,126	1.76	257,133.73
1929	341,622	1.23	418,737.01
1930	480,192	.98	472,901.08
1931	732,916	.84	613,524.00
1932	1,149,247	.87	1,003,106.01
1933	1,855,716	.94	1,735,407.39
1934	2,324,112	.96	2,238,102.81
1935	2,182,477	.94	2,058,388.17
1936	2,352,034	.94	2,209,734.74
1937	2,637,345	.93	2,449,588.22
1938	2,030,536	.91	1,851,291.56
1939	3,403,581	1.20	4,092,399.26
1940	3,008,290	1.43	4,315,589.83
1941	3,318,969	1.35	4,489,229.05
1942	2,698,391	1.64	4,420,380.37
1943	1,091,887	2.32	2,533,084.18

BARLOW REPORT

The conclusions of the Right Honourable Sir Montague Barlow, after a thorough survey of the Alberta coal industry in 1935 re relation to the Ontario market and the question of freight rates and subventions were: - (1)

"1. That the Railway Companies, in connection with P.C. 740, and the Subvention, thereunder, be asked to give a friendly assurance, on the lines known as a gentleman's agreement, that the arrangements shall be continued say for five years; and further, that a reduction for the same period of 50¢ off the present charge of \$8.00 should be conceded.

"2. That the Dominion Government similarly be asked for an assurance that the \$2.50 subvention be continued for 5 years; and with an increase of 50¢ for the same period to overcome temporary initial difficulties, the increase to be reconsidered at the end of the period, if a substantial increase in traffic has been by that time secured."

SUBVENTIONS.

Subventions, originally established in 1928, have undoubtedly helped to move Canadian coal to market. They have shown that there is a Canadian market ready to take Canadian coal in quantity, but they have, in effect, only opened the door to the market. The failure of both the operator and the market purchaser to fully respond has been due to the fact that in any year, or at any time, this door might be slammed shut.

It would appear that when help to move coal both from the far Eastern fields of Nova Scotia and New Brunswick and the far Western mines of Alberta and British Columbia to Ontario and Quebec was originally mooted, there was a great deal of argument, both as to an appropriate freight rate and as to the need for assistance from the Dominion treasury in the public interest. The arrangements finally made were in the nature of a compromise between conflicting arguments and influences, and as an experiment. An experiment intended, as to the railways, to ascertain if, at the rate established, they could earn a profit, or at least break even, and on the part of the Government to find if the help, and the marketing of this Canadian coal through such assistance, was of general and justifiable public benefit.

No definite information as to the sufficiency or otherwise of the railway freight rate is presently available, and as the freight rate has a direct bearing on the subvention rate, there is here an additional and valid reason why your Commission might with propriety ask for complete information herein from the Railways. Without information to the contrary, it would be reasonable to assume that the rate has been satisfactory to the railways as over the intervening 16 years, millions of tons of coal have been moved to market under the arrangement without serious complaint, otherwise to be expected, from the carriers.

That the subventions paid by the Dominion, as part of this original compromise assistance plan, is of general public benefit, is also now recognized and demonstrated by its continuance from year to year. The economic justice of this assistance from the national viewpoint will be dealt with elsewhere in this submission.

Total coal subventions, with average rate, 1928-43 inclusive, paid in the movement of Canadian coal is as shown on Table 24.

(1) Report of the Royal Commission Respecting the Coal Industry of the Province of Alberta, 1935, Sir Montague Barlow, Page 1.

TABLE NO. 25

COAL SUBVENTIONS CANADA BY PROVINCES

TOWNAGE AND SUBVENTIONS PAID - MOVEMENT OF COAL UNDER ASSISTED RATES

Year	ALBERTA			NOVA SCOTIA			NEW BRUNSWICK			BRITISH COLUMBIA (Bunker Export)			BRITISH COLUMBIA (S.C. Growers)			SASKATCHEWAN			TOTAL - CANADA		
	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1928	32,101	5.96	191,322.57	113,905	0.58	65,500.38	130	1.75	209.78	-	-	-	-	-	-	-	-	-	146,126	1.76	207,133.73
1929	37,115	5.74	213,136.73	304,276	0.67	205,270.15	231	1.43	330.12	-	-	-	-	-	-	-	-	-	341,622	1.23	419,797.01
1930	78,450	3.02	237,215.11	372,029	0.58	214,720.41	76	1.95	70.20	-	-	-	10,073	1.10	11,092.54	19,604	0.50	9,602.82	460,192	.98	472,901.08
1931	156,099	1.77	298,561.92	401,597	0.56	225,137.08	239	.68	162.49	66,130	0.32	21,059.70	28,374	1.21	46,542.94	60,477	0.45	27,060.87	732,916	.84	613,524.00
1932	184,765	1.66	306,301.53	710,449	0.77	545,744.30	1,195	.75	896.13	99,340	0.45	44,652.13	53,021	1.22	64,613.70	100,479	0.41	40,698.22	1,149,247	.87	1,003,106.01
1933	165,479	1.47	271,964.20	1,384,268	.92	1,280,222.84	1,163	.84	980.76	79,584	0.45	35,528.62	74,266	1.75	92,525.63	130,966	0.41	54,085.12	1,835,716	.94	1,733,407.39
1934	213,820	1.56	339,977.49	1,748,004	0.97	1,697,450.78	10,196	.84	8,609.22	98,419	0.47	46,390.63	109,443	1.09	119,346.18	144,228	0.29	42,128.31	2,324,112	.96	2,236,102.31
1935	221,470	1.55	344,740.28	1,588,302	0.94	1,489,412.37	1,323	.74	10,244.29	102,493	0.66	67,261.46	117,303	.97	114,177.76	138,584	0.23	32,231.99	2,182,477	.94	2,058,388.17
1936	232,501	1.49	345,479.51	1,677,096	0.94	1,572,780.24	20,889	.73	15,141.4	143,324	0.73	112,324.14	131,330	.95	124,701.19	146,894	0.26	38,153.52	2,352,054	.94	2,209,734.74
1937	233,688	1.44	335,280.80	1,908,821	0.94	1,785,791.70	41,083	.79	32,362.55	199,650	0.85	169,650.21	90,193	.98	88,471.08	163,970	0.23	38,031.88	2,637,345	.93	2,449,588.22
1938	248,075	1.44	357,217.94	1,977,115	0.91	1,855,213.26	32,305	.73	23,455.94	152,727	0.80	122,726.79	73,899	.82	60,817.67	145,615	0.23	33,759.96	2,030,536	.91	1,821,291.56
1939	368,107	1.61	596,376.12	2,420,694	1.23	2,988,403.66	54,160	.84	45,663.98	241,083	0.88	211,083.26	160,192	1.36	217,579.78	159,340	0.24	37,592.44	3,403,581	1.20	4,092,399.68
1940	553,486	1.96	1,083,436.70	1,940,570	1.36	2,643,366.54	59,224	.72	42,385.65	227,227	0.81	183,173.37	186,587	1.61	337,277.94	41,256	0.63	25,949.43	3,008,290	1.43	4,315,589.83
1941	802,821	1.97	1,579,433.79	2,015,830	1.09	2,198,354.32	42,782	.71	31,226.06	28,701	0.75	74,025.83	355,157	1.77	594,338.80	22,677	0.96	21,840.05	3,318,969	1.35	4,489,229.05
1942	598,107	1.95	1,086,054.45	1,655,323	1.54	2,710,437.79	4,627	.79	3,532.20	128,734	0.75	104,030.71	356,011	1.84	501,520.76	13,649	0.96	13,144.46	2,698,391	1.64	4,420,380.37
1943	121,986	.73	89,018.78	602,892	2.87	2,310,513.26	2,760	.81	4,292.61	44,309	0.75	33,232.02	105,469	.91	85,492.34	10,963	0.96	10,335.17	1,091,887	2.32	2,533,094.18

TABLE NO. 26

COAL SUBVENTIONS - ALBERTA

(Tonnage and Subventions Paid - Alberta Coal Moved to Manitoba, Ontario and British Columbia, Under Assisted Rates)

YEAR	MANITOBA			ONTARIO			BRITISH COLUMBIA			TOTAL		
	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention
		(\$)	(\$)		(\$)	(\$)		(\$)	(\$)		(\$)	(\$)
1928	-	-	-	32,101	5.96	191,323.57	-	-	-	32,101	5.96	191,323.57
1929	-	-	-	37,115	5.74	212,136.73	-	-	-	37,115	5.74	212,136.73
1930	46,401	1.08	49,206.30	83,049	5.69	469,008.81	-	-	-	79,450	3.02	237,215.11
1931	142,218	1.16	165,236.37	23,886	5.37	128,323.55	-	-	-	166,099	1.77	293,561.92
1932	164,748	1.26	207,375.66	20,013	4.94	98,925.87	-	-	-	184,763	1.66	306,301.53
1933	140,738	1.19	167,218.44	44,741	2.84	104,745.76	-	-	-	185,479	1.47	271,964.20
1934	120,036	.93	118,396.43	32,784	2.23	73,191.06	-	-	-	213,820	1.56	333,977.49
1935	99,123	.69	68,226.05	122,347	2.26	276,514.23	-	-	-	221,470	1.56	344,740.28
1936	99,276	.59	58,746.95	132,225	2.15	286,732.56	-	-	-	232,501	1.49	345,479.51
1937	99,801	.55	54,397.22	133,827	2.09	280,283.58	-	-	-	232,628	1.44	335,280.80
1938	104,975	.52	54,200.65	143,900	2.11	303,017.29	-	-	-	248,875	1.44	357,217.94
1939	122,546	.70	92,705.97	235,561	2.12	499,669.15	-	-	-	358,107	1.61	592,376.12
1940	81,001	1.21	97,699.22	472,425	2.08	985,737.48	-	-	-	553,426	1.96	1,082,436.70
1941	76,285	.98	74,519.43	726,556	2.07	1,504,914.36	-	-	-	802,821	1.37	1,579,433.79
1942	26,417	.54	8,854.26	526,856	2.04	1,074,027.55	4,834	.65	3,142.54	558,107	1.35	1,086,084.45
1943	-	-	-	11,106	1.53	16,943.08	110,880	.65	72,075.70	121,986	.73	89,018.78

*

TABLE 27

COAL SUBVENTIONS -- ALBERTA

Tonrage and Subventions paid - Alberta Coal moved to Manitoba under Assisted Rates

YEAR	INDUSTRIAL				RAILWAY				TOTAL			
	Tons	Per Ton \$	Subvention \$		Tons	Per Ton \$	Subvention \$		Tons	Per Ton \$	Subvention \$	
1928	-	-	-		-	-	-		-	-	-	
1929	-	-	-		-	-	-		-	-	-	
1930	44,705	1.08	48,349.72		696	1.23	856.68		45,401	1.08	49,206.30	
1931	117,944	1.20	141,512.83		24,269	.98	23,724.14		142,213	1.16	165,236.37	
1932	135,537	1.26	197,491.26		8,211	1.20	9,854.40		164,748	1.26	207,378.66	
1933	130,265	1.19	155,248.20		10,473	1.14	11,939.64		140,738	1.19	167,218.44	
1934	97,825	.95	95,632.05		26,211	1.15	30,164.40		120,036	.95	118,986.43	
1935	96,162	.69	66,074.46		2,921	.73	2,131.57		99,123	.69	68,216.05	
1936	96,344	.60	56,518.36		2,932	.62	1,828.66		99,276	.59	58,746.85	
1937	95,343	.51	48,920.26		4,488	1.26	6,046.94		99,201	.55	54,997.22	
1938	104,975	.52	54,200.63		-	-	-		104,975	.52	54,200.65	
1939	112,197	.52	59,444.33		19,349	1.77	34,262.64		132,546	.70	92,706.97	
1940	76,849	.57	44,490.30		44,152	1.77	78,208.92		91,001	1.21	97,699.22	
1941	41,353	.32	13,271.51		34,912	1.76	61,718.14		76,265	.36	74,511.43	
1942	26,417	.34	8,984.26		-	-	-		26,417	.34	8,984.26	
1943	-	-	-		-	-	-		-	-	-	

TABLE No. 28

COAL SUBVENTIONS - ALBERTA

Tonnage and Subventions paid - Alberta Coal moved to Ontario under assisted rates.

YEAR	FC - 439 - 740			INDUSTRIAL			RAILWAY			TOTAL		
	Tons	Per Ton \$	Subvention \$	Tons	Per Ton \$	Subvention \$	Tons	Per Ton \$	Subvention \$	Tons	Per Ton \$	Subvention \$
1928	32,101	5.96	191,323.57	-	-	-	-	-	-	32,101	5.96	191,323.57
1929	37,116	5.74	213,136.73	-	-	-	-	-	-	37,116	5.74	213,136.73
1930	33,049	5.69	188,008.61	-	-	-	-	-	-	33,049	5.69	188,008.61
1931	23,463	5.43	127,565.85	403	1.89	760.00	-	-	-	23,866	5.37	128,325.85
1932	19,116	5.09	97,340.87	699	1.76	1,585.00	-	-	-	20,015	4.94	98,925.87
1933	30,531	2.50	76,326.11	1,327	2.00	2,654.01	12,883	2.00	25,765.64	44,741	2.34	104,745.76
1934	64,868	2.50	157,172.22	936	1.98	1,849.36	37,980	2.00	75,959.48	83,784	2.29	214,991.06
1935	63,802	2.50	159,506.81	1,140	1.93	2,196.51	67,405	2.00	134,810.51	122,347	2.26	276,514.23
1936	65,229	2.50	163,075.77	3,226	1.77	5,694.87	64,770	1.92	117,961.92	133,225	2.15	286,732.56
1937	55,277	2.50	138,195.80	8,312	1.69	14,050.07	70,238	1.82	128,007.71	133,827	2.09	280,283.58
1938	64,086	2.50	160,144.80	12,639	1.68	21,179.34	67,205	1.81	121,653.15	143,900	2.11	303,017.29
1939	91,453	2.50	228,739.70	1,636	1.71	2,633.66	142,632	1.88	266,295.77	235,561	2.12	499,669.15
1940	150,164	2.50	375,418.27	9,493	1.79	17,000.38	312,768	1.90	593,318.83	472,425	2.06	966,737.49
1941	256,636	2.50	641,605.89	17,473	1.74	30,348.66	452,447	1.84	832,959.11	726,556	2.07	1,504,914.36
1942	254,714	2.50	636,800.39	15,101	1.80	27,180.18	257,041	1.60	410,067.11	526,856	2.04	1,074,027.65
1943	110	-	273.53	39	1.76	67.18	11,177	1.53	17,149.83	11,106	1.53	16,943.08

* Re; 1943, Movement during year - 63.20 tons \$157.98
 Refunded - 172.76 tons \$431.81
 109.56 tons \$273.53

TABLE No. 29

COAL SUBVENTIONS - BRITISH COLUMBIA CROWNEST

(Tonnage and Subventions Paid - British Columbia Crowneast Coal - Moved to Manitoba and Ontario Under Allocated Rates)

YEAR	MANITOBA (INDUSTRIAL)			ONTARIO			TOTAL		
	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention
		\$	\$		\$	\$		\$	\$
1928	-	-	-	-	-	-	-	-	-
1929	-	-	-	-	-	-	-	-	-
1930	10,073	1.10	11,092.54	-	-	-	10,073	1.10	11,092.54
1931	38,374	1.21	46,542.94	-	-	-	38,374	1.21	46,542.94
1932	53,021	1.22	64,613.70	-	-	-	53,021	1.22	64,613.70
1933	69,825	1.20	83,762.42	4,431	2.00	8,863.41	74,256	1.25	92,625.83
1934	93,309	0.93	87,085.29	16,136	2.00	32,260.89	109,445	1.09	119,346.18
1935	92,605	0.70	64,925.95	24,698	2.00	49,251.92	117,303	.97	114,177.78
1936	95,212	0.60	57,563.10	36,118	1.86	67,188.09	131,330	.95	124,701.19
1937	56,180	0.52	29,295.47	34,013	1.74	59,173.61	90,193	.98	88,471.08
1938	56,311	0.52	29,499.47	17,588	1.78	31,318.20	73,899	.82	60,817.67
1939	61,377	0.52	32,138.62	98,815	1.88	185,141.16	160,192	1.36	217,279.78
1940	20,838	0.75	15,549.22	165,749	1.94	321,728.72	186,587	1.81	337,277.94
1941	27,497	0.48	13,147.47	307,660	1.89	581,191.83	335,157	1.77	594,338.80
1942	44,830	0.27	12,242.64	281,181	1.74	489,278.12	326,011	1.54	501,520.76
1943	61,774	0.30	18,532.31	43,695	1.53	66,960.03	105,469	.81	85,492.34

*

TABLE NO. 30

COAL SUBVENTIONS - BRITISH COLUMBIA CROWNESTTonnage and Subventions paid - British Columbia Crowneast Coal - Moved to Ontario under Assisted Rates.....

YEAR	P.C. 3286 and 7508			INDUSTRIAL			RAILWAY			TOTAL		
	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention	Tons	Per Ton	Subvention
		\$	\$		\$	\$		\$	\$		\$	\$
1928	-	-	-	-	-	-	-	-	-	-	-	-
1929	-	-	-	-	-	-	-	-	-	-	-	-
1930	-	-	-	-	-	-	-	-	-	-	-	-
1931	-	-	-	-	-	-	-	-	-	-	-	-
1932	-	-	-	-	-	-	-	-	-	-	-	-
1933	-	-	-	582	2.00	1,164.57	3,849	2.00	7,698.84	4,431	2.00	8,863.41
1934	-	-	-	1,226	1.99	2,440.07	14,910	2.00	29,820.82	16,136	2.00	32,260.89
1935	-	-	-	14,279	1.99	28,414.68	10,419	2.00	20,837.24	24,698	2.00	49,251.92
1936	-	-	-	21,748	1.84	39,965.74	14,370	1.89	27,172.35	36,118	1.86	67,138.09
1937	-	-	-	20,734	1.71	35,454.44	13,279	1.79	23,721.17	34,013	1.74	59,175.61
1938	-	-	-	352	1.71	602.65	17,236	1.78	30,712.55	17,588	1.78	31,318.20
1939	714	2.50	1,783.96	15,754	1.71	26,939.55	82,347	1.90	156,417.65	98,815	1.88	185,141.16
1940	4,573	2.50	11,431.86	23,273	1.71	39,796.80	137,903	1.96	270,500.06	165,749	1.94	321,728.72
1941	16,006	2.50	40,016.15	53,413	1.77	94,804.87	238,239	1.87	446,370.31	307,660	1.89	581,191.33
1942	15,387	2.50	38,468.03	31,246	1.45	45,200.66	234,548	1.73	405,609.43	281,191	1.74	489,278.12
1943	-	-	-	-	-	-	43,695	1.53	66,960.03	43,695	1.53	66,960.03

The allocation of these subventions, by Provinces, is shown on Table 25.

The distribution of shipments of Alberta coal made under subvention assistance, is shown on Table 26.

The different kinds of Alberta coal moving to the Manitoba and Ontario markets, respectively, is shown on Tables 27 and 28.

As of general interest, and in case the same has not been already laid before you by our sister Province of British Columbia, we include a breakdown of the coal moved under subvention from British Columbia Crows' Nest area to Manitoba and Ontario and as the latter is the predominant market a further division as to the kinds of coal, as per Tables 29 and 30 respectively.

Publicity.

As a requisite to the successful marketing of Canadian coal in Canada, publicity assumes a role of major proportions and should involve the use of every available means for building favorable public opinion and stimulating not only consumer interest but demand.

The federal government as a result of war loan drives has had ample tangible proof of the need for and benefits to be derived from carefully planned intensive and extensive publicity campaigns and every type of service used in such campaigns should be used in selling Canadian coal to Canadians.

It is understood, of course, that there should be three phases of publicity, namely one specifically conducted by operators to assist in selling their particular kind of coal, another conducted by or with the assistance of the provincial governments to assist in selling all types of coal in their respective provinces and a third of a general character conducted by the federal government.

It is respectfully submitted that, while the federal government's publicity effort should cover Canada from coast to coast, it should be concentrated especially in Ontario and Quebec.

Radio programs, newspaper statements and advertisements and motion picture news reel and short features should be prepared and distributed from coast to coast by the federal government. Billboards and other forms of outdoor advertising might be concentrated in Ontario as should exhibits at fairs and exhibitions, lectures before clubs and organizations and, possibly travelling demonstrators capable of demonstrating efficient methods of using Canadian coal especially for domestic purposes.

It is suggested that the National Film Board undertake to produce entertaining pictures of an educational character to illustrate how coal is mined, how safety devices and regulations prevent accidents, and to impress the Canadian people with the importance in the economy of Canada of the consumer's dollar not only to the miners themselves but to eastern industries from whom miners and others in the industry buy large quantities of consumer goods. The National Film Board should also undertake the production of motion pictures to illustrate the various uses of coal, not only as fuel but as a source of chemicals and synthetic products. The background for such a production might well be the universities of Canada in which extensive research is conducted because this would give Canadian universities much-needed excellent publicity. Motion picture trailers such as those used extensively in theatres during war loan, Red Cross and other campaigns should also be distributed. These are matters which require federal action because the federal government alone has the facilities for such production and distribution.

The federal government should arrange through the Canadian Broadcasting Corporation for the preparation of continuity for production and presentation of actuality broadcasts, addresses and spot announcements throughout Canada.

The federal government should also conduct a continuous newspaper and periodical campaign in behalf of Canadian coal similar to campaigns conducted in the past in behalf of other Canadian products.

SUMMARY - MARKETS - FREIGHT - SUBVENTIONS.

In the light of further practical experience since the Barlow report was written, and present day conditions, it is held and here submitted that both the freight rate and subvention should be of an unquestioned and established nature. To effect improvement and stability in this important industry and to allow for desirable expansion as part of Canada's developing economy in the Post-War years, it is essential that there should be established by Statutory enactment a special and favourable freight rate structure for Canadian coal and that subventions be likewise placed on a permanent or semi-permanent basis.

It is further held that, since all the costs covering railway operations are available only to railways, that this Royal Commission should explore fully with the railways the justification for the high basic freight rate on coal shipments to Ontario, and a complete examination of freight handling costs of coal be conducted in respect to present day conditions and to determine the possibility of rates more favorable to coal through the use of modern equipment and solid trains.

A publicity campaign conducted under the Dominion Government through newspaper, periodical, radio and other educational media would stimulate an interest in and create a larger Canadian demand for Canadian coal.

It is pointed out that a considerable market would be established were a national policy to adhere to the principle that Canadian coal be purchased always when payment is to be made with public funds.

It is advisable that a United States-Canadian reciprocal agreement be effected whereby Canadian western coal might freely move to western United States points as against like importations of American coal to mid-Canadian points.

It is also to be noted from this section that, as a further justification for special treatment for Canadian coal, the present Dominion policy subsidizes United States anthracite coal to the extent of 70 cents per ton.

ALBERTA



COAL

SECTION J

THE ECONOMIC IMPORTANCE OF THE COAL INDUSTRY
IN CANADA

THE ECONOMIC IMPORTANCE
of the
Coal Industry in Canada

1. THE COAL INDUSTRY IN THE CANADIAN ECONOMY

(1) Consumption of Coal in Canada
(a) Aggregate Consumption

By 1921 the quantity of coal consumed in Canada exceeded 30 million tons. (Table 31). Consumption continued to increase and reached a maximum of 34 million tons in 1924. With the emergence of the depression in 1930 the amount of coal consumed declined to a low of 22 million tons in 1933. By 1940 consumption was back to 33 million tons.

TABLE 31. CONSUMPTION OF CANADIAN AND IMPORTED COAL IN CANADA, BY QUANTITIES AND PERCENTAGES, BY FIVE-YEARS, 1886 - 1940.

YEAR	CANADIAN COAL SHORT TONS	p.c.	IMPORTED COAL "ENTERED FOR CONSUMPTION" SHORT TONS	p.c.	GRAND TOTAL SHORT TONS	PER CAPITA SHORT TONS
1886	1,595,950	45.9	1,884,161	54.1	3,480,111	0.758
1891	2,606,490	46.7	2,980,222	53.3	5,586,712	1.153
1896	2,639,055	45.1	3,206,456	54.9	5,845,511	1.140
1901	4,912,664	50.5	4,810,213	49.5	9,722,877	1.810
1906	7,927,560	51.7	7,393,906	48.3	15,326,466	2.425
1911	9,822,749	40.5	14,424,949	59.5	24,247,698	3.365
1916	12,348,036	41.3	17,517,820	58.7	29,865,856	3.717
1921	13,070,217	41.9	18,103,620	58.1	31,173,837	3.547
1926	15,086,296	47.7	16,565,555	52.3	31,651,851	3.349
1931	11,682,779	47.7	12,828,327	52.3	24,511,106	2.362
1936	14,508,642	53.3	12,719,515	46.7	27,228,167	2.469
1940 ⁽¹⁾	16,666,234	49.5	17,036,090	50.5	33,702,324	2.960

(1) CANADA YEAR BOOK 1942 p. 309 . Earlier Data from other Year Books.

Excluding periods of depression with idle men and resources, it appears that the capacity of the country to consume coal has remained fairly constant, at about 35 million tons, for the past 20 years.

(b) CONSUMPTION OF CANADIAN AND IMPORTED COAL

The quantity of Canadian coal consumed in Canada (coal mines' sales, colliery consumption, coal supplied to employees and coal used in making coke, etc., less the tonnage of coal exports) reached 12 million tons in 1916, and 13 million tons in 1921. (Table 31) In these years consumption of imported coal exceeded that of Canadian coal, imported coal providing for 58.7% and 58.1% of total consumption. Although the proportion of imported coal declined it remained over 50% until 1932. Canadian coal provided for slightly more than one-half of total consumption between 1932 and 1939, but fell below 50% in 1940.

While there have been variations over short periods of years, over the long period Canadian coal has supplied approximately 50% of total Canadian Consumption.

(c) PER CAPITA CONSUMPTION

With increasing population and with industrial development, per

capita consumption of coal increased continuously until the early twenties. Since then, the tendency for aggregate consumption to become stabilized has resulted in a moderate decline in per capita consumption. This decline was aggravated during the years of depression, and, following a low of 2.085 tons in 1933, per capita consumption increased to 2.960 tons in 1940 (Table 31).

It appears that, with the full utilization of resources per capita consumption is now approximately 3 tons, that, if past trends continue, per capita consumption will tend to decline slowly; and that, if population and industrialization do not increase more rapidly than over the past 20 years, the growth of population and industrial activity will no more than offset other factors making for a reduction in coal consumption and aggregate consumption will remain at approximately 35 million tons per year.

(d) COMPETITION OF OTHER FUELS AND SOURCES OF ENERGY

Coal consumption has not increased with expanding population and increasing industrialization. This is largely due to more efficient utilization of coal and to increased use of other sources of heat and energy.

Between 1926 and 1941 hydro-electric horse power in Canada increased from 4,549,383 to 8,845,038 h.p. i.e. almost doubled. Over 81% of the installed capacity in 1941 was in Quebec and Ontario.

During the same period (1926 - 1941) the quantity of natural gas produced in Canada increased from 19,208,209 thousand cubic feet to 43,495,353 thousand cubic feet, i.e. more than doubled. In 1941 over 71% of the natural gas was produced in Alberta. Gas wells in Ontario produced 27%.

In the same period (1926 - 1941) the quantity of crude petroleum produced in Canada increased from 364,444 barrels to 10,133,838 barrels. The main increase occurred after 1936 (1,500,374 barrels). Production outside of Alberta is quite small.

The problem of coal should be considered in the perspective of the larger fuel problem. Natural gas and petroleum are exhaustible resources. The use of natural gas is limited to areas adjacent to producing fields; and concern is being shown over a prospective world shortage of liquid fuels. Even if additional sources of fuel oil are discovered extraction and distribution costs may be expected to rise; and prices with them. Hydro-electric energy may prove the most economical source of power in many locations; although in others coal will continue to have an advantage. However, there appears to be no immediate prospect of electrical energy displacing coal for heating purposes, or in transportation. (1) Allcut says, "About 40 per cent of the energy derived from fuel is used as power, the remaining 60 per cent being employed for heating purposes. Electrical energy is the cleanest and most convenient source of heat for buildings, but it has been pointed out in a recent paper (Huet Hassue, "Heating of Dwellings" Engineering Journal, July, 1943.) That its employment is not economical or practicable for the following reasons: (1) the enormous amount of power required; (2) the large capital investment; (3) the seasonal nature of the demand - the maximum demand for heating coincides with the present maximum power demand, and there is practically no heating load during the summer months; (4) the high cost of heating (resulting from 1,2, and 3), which is more than three times that of the present cost of heating from fuel."

(1) E.A. Allcut. "A Fuel Policy for Canada". The Canadian Journal of Economics and

While coal may become relatively less important as a source of power, its importance as a source of liquid fuels will increase if the prospective shortage of fuels oils materializes. Coal may be expected to retain its importance for heating, both of buildings and of materials in industry, and for railroad transportation.

(c) ACTIVITIES DEPENDENT ON COAL

The importance of the coal industry to Canada arises from the dependence of certain essential activities on a continuous supply of coal. Failure of the coal supply would disrupt the whole life of the country.

(i) Domestic Heating.

Many Canadian communities are wholly dependent on coal for heating dwellings. The climate of Canada makes it essential that the supply of fuel to these communities be maintained without interruption.

(ii) Heating of Industrial materials.

Many of Canada's largest and most essential processing industries use large quantities of coal both for heating premises and in effecting the transformation of materials.

In 1939, the value of coal and coke used for heating purposes in Canadian manufacturing industries was \$35,893,686. This was divided between the industrial groups as shown in Table 32

TABLE 32 COAL AND COKE USED IN MANUFACTURING INDUSTRIES IN CANADA
1939⁽¹⁾

Industrial Group	Coal \$	Coke \$	Coal & Coke \$
Vegetable Products	4,035,694	413,316	4,449,010
Animal Products	2,204,781	25,229	2,230,010
Textile & Textile Products	2,845,043	4,688	2,849,731
Wood & Paper Products	7,526,552	20,307	7,546,859
Iron & Its Products	4,489,291	309,187	4,798,478
Non-Ferrous Metal Products	5,007,855	2,773,535	7,781,390
Non-Metallic Mineral Products	3,128,838	1,263,809	4,392,647
Chemical & Allied Products	1,609,144	56,360	1,665,504
Miscell. Industries	175,613	4,444	180,057

(1) Date From CANADA YEAR BOOK, 1942 p. 345

The most important industries using heat in the transformation of materials are: foundries and machine shops; brick tile, lime, and cement works; petroleum refineries; the glass industry; distilleries; food preparation plants; rubber goods industry; etc.

(iii) Steam Railroads

The steam railroads of Canada are the largest users of coal.

TABLE 33. FUEL CONSUMED BY LOCOMOTIVES. (1)

YEAR	TOTAL TONS	TOTAL COST \$	COST PER TON \$
1938	6,689,556	29,433,743	4.40
1939	7,174,324	30,493,058	4.25
1940	8,138,688	34,996,659	4.30
1941	9,988,171	43,842,100	4.39
1942	11,137,159	54,633,803	4.91
1943	12,562,344	69,812,142	5.56

(1) Statistics of Steam Railways of Canada for the Year Ending December 31, 1943.

TABLE 34 BITUMINOUS COAL USED BY LOCOMOTIVES (1)

	TONS
Freight	7,530,102
Passenger	2,526,891
Switching	1,700,702
Non-Revenue	229,545
	<hr/>
Total	11,987,240
	<hr/>
Total Cost	\$66,102,994
Cost/Ton	\$ 5.51

(1) STATISTICS OF STEAM RAILWAYS OF CANADA FOR THE
YEAR ENDING DECEMBER 31, 1943.

TABLE 35. ELECTRIC ENERGY GENERATED IN HYDRO AND FUEL
STATIONS BY PROVINCES, 1941 (1)

	THOUSANDS OF KILOWATT HOURS	
	HYDRO STATIONS K.W.H.	FUEL STATIONS K.W.H.
CANADA	32,663,954	664,652
PRINCE EDWARD ISLAND	451	11,418
NOVA SCOTIA	310,774	160,640
NEW BRUNSWICK	434,180	98,894
QUEBEC	17,735,699	5,519
ONTARIO	9,633,838	1,624
MANITOBA	1,920,546	6,119
SASKATCHEWAN	--	196,341
ALBERTA	179,409	140,334
BRITISH COLUMBIA	2,449,057	23,763

(1) CENSUS OF INDUSTRY, 1941. CENTRAL ELECTRIC STATIONS IN
CANADA. 1943. P. 38

TABLE 36. COAL USED AS FUEL IN CENTRAL ELECTRIC STATIONS.

By provinces, 1941⁽¹⁾

	BITUMINOUS COAL				LIGNITE	
	CANADIAN		IMPORTED		CANADIAN	
	QUANTITY (TONS)	VALUE (\$)	QUANTITY (TONS)	VALUE (\$)	QUANTITY (TONS)	VALUE (\$)
CANADA	416,138	1,659,621	953	5,708	209,800	384,364
P.E.I.	8,696	55,044	--	--	--	--
N.S.	183,074	774,392	--	--	--	--
N.B.	81,682	356,180	519	2,485	--	--
QUEB.	--	--	434	3,223	--	--
ONT.	260	1,240	--	--	--	--
MAN.	4,330	19,365	--	--	--	--
SASK.	91,643	348,893	--	--	64,594	116,578
ALTA.	26,425	26,885	--	--	145,206	267,786
B.C. & Y.	20,028	77,622	--	--		

⁽¹⁾ CENSUS OF INDUSTRY, 1941. CENTRAL ELECTRIC STATIONS IN CANADA,

1943. p. 40

TABLE 37. COMPARISON OF COAL INDUSTRY AND SOME LEADING MANUFACTURES. (1939)

INDUSTRY	NO. OF EMPLOYEES	CAPITAL INVESTED		NET VALUE OF PRODUCTION		
		RANK	\$	RANK	\$	RANK
SAWMILLS (1)	32,399	1	85,628,394	5	44,852,358	4
PULP & PAPER	31,014	2	597,908,918	1	103,123,660	1
COAL (2)	26,472	3	109,072,484	3	38,062,870	5
CLOTHING, MEN'S FACTORY	22,426	4	40,791,892	12	30,506,388	9
ELECTRICAL APPARATUS	20,061	5	102,245,833	4	48,462,341	3
COTTON YARN & CLOTH	19,723	6	81,272,668	6	32,279,911	8
BUTTER & CHEESE	17,448	7	62,430,427	9	33,185,177	7
AUTOMOBILES	14,427	8	59,470,986	10	34,972,702	6
SLAUGHTERING & MEAT PACKING	12,765	9	68,660,761	7	29,048,432	10
NON-FERROUS SMELTING & REFINING	12,449	10	192,186,465	2	80,057,833	2
FLOUR & FEED MILLS	5,898	11	47,926,318	11	25,051,936	12
PETROLEUM PRODUCTS	4,764	12	66,381,189	8	25,534,218	11

(1) DATA FOR MANUFACTURING INDUSTRIES FROM CANADA YEAR BOOK, 1942.

(2) DATA FOR COAL INDUSTRY FROM MINERAL PRODUCTION OF CANADA, 1941.

Fuel consumption of railroad locomotives is shown in Tables 33 and 34. In Table 33 the total tonnage and total cost include all fuels. It is apparent from Table 34 that the consumption of fuels other than coal is relatively small. In 1943, 95% by weight, of the fuel used was bituminous coal.

(iv) Industrial Power

Although hydro-electric energy has tended to supplant coal as a source of industrial power, many industries in Canada are now, and are likely to remain, dependent on coal for power. Industries which develop in localities distant from suitable sites for hydro development but close to deposits of coal find it advantageous to use coal rather than hydro-power. In other cases, where heat is required in processing materials, the use of coal for both heating and power purposes has proven most economical.

It is evident from Table 35 that the proportion of total energy generated in hydro stations is high in those Provinces lacking in coal; and that in Provinces with coal reserves a high proportion of total energy generated is derived from fuel stations.

Not all fuel stations use coal. In Alberta, for example, some fuel stations (e.g. Medicine Hat) use natural gas; and there are a number of small diesel plants. The amount of coal used in central electric stations in Canada is shown in Table 36. The amount of imported coal used in central electric stations is negligible. The reason for this is, of course, that fuel stations are generally located in Provinces which are distant from sources of imported coal and/or possess substantial coal reserves.

(2) THE SIZE OF THE COAL INDUSTRY

(a) Coal in Comparison with other Minerals

Coal may be compared with other minerals in terms of the gross value of production, as follows:

<u>Gross Value of Production, 1941</u>	
Gold	\$205,789,392
Nickel	68,656,795
Copper	64,407,497
Coal	58,059,630
Asbestos	21,468,840
Zinc	17,477,337
Lead	15,470,815

(b) The Coal Industry in Comparison with Leading Manufactures.

In table 37 the coal industry of Canada is compared with some leading manufacturing industries in terms of numbers of employees, capital invested, and not value of production.

By reason of its size in comparison with other industries the condition of the coal industry is clearly a matter of importance to the country.

II. THE COAL INDUSTRY IN THE ECONOMY OF THE PROVINCE OF ALBERTA

(1) ALBERTA AND THE CANADIAN COAL INDUSTRY

In 1941, coal produced in Alberta amounted to 6,969,962 tons, and represented

TABLE 38. ALBERTA AND THE CANADIAN COAL INDUSTRY, 1941 (1)

	CANADA	ALBERTA		NOVA SCOTIA	
	AMOUNT	%		AMOUNT	%
		OF CANADA			OF CANADA
Coal Produce. Tons	18,225,921	6,969,962	38.3	7,387,762	40.6
Gross Value of Production	\$ 58,059,630	19,382,471	33.4	28,446,204	48.8
Net Value of Production	\$ 45,780,856	16,152,089 ⁽²⁾	35.3	23,705,160	51.8
Capital Invested	\$106,498,356	36,763,515	34.5	43,147,587	40.5
Employees	No. 26,330	8,068	30.7	13,468	51.2
Salaries & Wages	\$ 38,149,602	12,247,966	32.1	19,826,981	52.0

(1) DATA FROM MINERAL PRODUCTION OF CANADA, 1941

(2) ESTIMATED.

38.3% of the 18,225,921 tons produced in Canada (Table 38). The gross and net values of production and the capital invested in Alberta exceeded one-third of the Dominion totals. Number of employees and salaries and wages paid were slightly less than one-third of the corresponding amounts for Canada.

(2) THE COAL INDUSTRY IN AN AGRICULTURAL PROVINCE

Agriculture is still the most important industry in the Province of Alberta, and the welfare and stability of the Province, depend largely on the income of agriculture. In the past the farm income of the Province has been highly variable. (Table 39) The farm income in 1932 was little more than one-tenth of the income in 1928. Between 1941 and 1942 farm income almost trebled. In 1943 it dropped back to practically one-half the amount of 1942.

TABLE 39 ALBERTA NET FARM INCOME (1)

<u>YEAR</u>	<u>FARM INCOME</u>	<u>YEAR</u>	<u>FARM INCOME</u>
1926	\$114,500,000	1934	\$45,700,000
1927	115,700,000	1935	48,900,000
1928	155,900,000	1936	52,300,000
1929	119,100,000	1937	75,500,000
1930	39,200,000	1940	92,503,000
1931	18,700,000	1941	88,869,000
1932	16,600,000	1942	235,636,000
1933	19,400,000	1943	128,662,000

(1) DATA FOR YEARS 1926 - 37, FROM "NATIONAL INCOME" APPENDIX 4 REPORT OF THE ROYAL COMMISSION ON DOMINION-PROVINCIAL RELATIONS.

(2) DATA FOR YEARS 1940 - 43 FROM "NET FARM INCOME, CANADA, 1940 TO 1943" QUARTERLY BULLETINS OF AGRICULTURAL STATISTICS, APRIL - JUNE, 1944.

Such irregularity inevitably places local institutions and activities under a severe strain; and greatly magnifies the problems of provincial administration. The problems arising out of irregular farm income are relieved by the presence of other industries not subject to the same irregularities. By reason of its size the coal industry of the Province, if able to operate steadily, would have a significant stabilizing effect.

(3) THE COAL INDUSTRY IN COMPARISON WITH LEADING MANUFACTURES

Coal Mining may be compared with leading manufacturing industries in the Province, in terms of numbers employed, capital invested, and net value of production. (Table 40). It will be seen that, in 1941, the numbers of employees and the capital invested in coal mining exceeded the comparable amounts for the five leading manufacturers together.

TABLE 40 COMPARISON OF COAL MINING WITH SOME LEADING MANUFACTURERS, ALBERTA, 1941

	<u>Net Value of Production</u>	<u>Capital Invested</u>	<u>Employees</u>
Slaughtering & Meat Pack	7,485,729	11,628,072	2,630
Petroleum Products	5,427,893	6,574,472	455
Sawmills	3,085,652	2,923,893	2,196
Butter & Cheese	3,056,206	4,972,705	1,198
Flour & Feed	2,951,855	8,193,155	793
5 Leading Manufact. Industries	22,007,335	34,292,297	7,272
Total Manufact. Industries	48,474,606	95,676,318	16,761
Coal Mining	16,152,059	36,763,515	8,068

TABLE 41. COAL USED IN THE MANUFACTURING INDUSTRIES OF ALBERTA
1938

INDUSTRIAL GROUP	BITUMINOUS COAL		ANTHRACITE	LIGNITE	COKE
	TONS	\$	\$	\$	\$
VEGETABLE PRODUCTS	12,353	27,402	85	52,644	11,914
ANIMAL PRODUCTS	36,308	60,953	--	56,864	
TEXTILES & TEXTILE PRODUCTS	505	1,352	--	--	
WOOD & PAPER PRODUCTS	4,855	12,821	85	3,099	
IRON & STEEL PRODUCTS	15,786	39,422	224	51,595	155
NON-METALLIC MINERAL PRODUCTS	17,796	76,840	--	23	--
CHEMICALS & CHEMICAL PRODUCTS	181	650	--	--	--
MISCELLANEOUS INDUSTRIES	256	660	12	--	--
TOTAL MANUFACTURING INDUSTRIES	88,040	220,100	406	164,225	12,069

TABLE 42. COAL USED IN SLAUGHTERING & MEAT PACKING,
AND BUTTER & CHEESE INDUSTRIES, ALBERTA.

	TONS	VALUE \$
SLAUGHTERING & MEAT PACKING. 1943		
Bituminous	3,418	22,082
Lignite	4,860	32,035
BUTTER & CHEESE FACTORIES. 1941		
All Coal	14,241	51,467

(4) ACTIVITIES DEPENDENT ON COAL

From information provided elsewhere it is evident that, excluding the railroads, Alberta's domestic market does not absorb any large proportion of the provincial output. However, many important activities within the Province are dependent on an assured and continuous supply of coal.

(a) Heating Buildings.

Alberta coal must compete with natural gas as a fuel for heating buildings. This limits the amount of coal used for this purpose. However, a substantial proportion of householders use coal to heat their dwellings and gas is only available in restricted areas.

(b) Central Electric Stations.

The installed horse-power capacity in steam plants in the province exceeds the hydro-electric horse power. The City of Edmonton operates a municipal steam plant; with a standby and exchange agreement with the Calgary Power Company which distributes hydro power. A steam plant at Drumheller serves the City of Drumheller, and the energy for a transmission system servicing a number of towns and villages in the area east and north of the city. Failure of the coal supply at these, and other points throughout the Province would cause great hardship, inconvenience and loss.

(c) Dependent Industries.

Albert's leading industries are engaged in the processing of raw materials of farm and forest origin. The quantities and value of coal used, by industrial groups, are shown in Table 41.

The Slaughtering and Meat Packing Industry and the Butter and Cheese Industry are two of the leading industries listed in Table 40. The coal used in these industries is shown in Table 42.

ALBERTA



COAL

SECTION K

INTERPROVINCIAL RELATIONS:
THE CASE FOR A NATIONAL FUEL POLICY

The Case for a National Fuel Policy

Alberta, in common with other coal producing provinces has claims against the Dominion on the basis of economics due to the unequal incidence of the protective tariff policy commonly known as the National Policy.

Manufacturing is largely concentrated in Ontario and Quebec constituting more than 81 per cent of the total manufacturers in Canada in 1941. (See Canada Year Book 1943-44, p.p. 413-414.)

Alberta with 13 per cent of the population of Ontario and Quebec produced less than 3 per cent of the value of manufactured goods produced in Ontario and Quebec.

The balance of trade flowing between the east and the west is difficult to determine but the prairie provinces mainly ship agricultural products eastward, largely for export. In return Ontario and Quebec ship manufactured goods to the west. These are largely protected by tariffs and often high tariffs with the result that the farmer and coal miner pay the enhanced price due to the tariffs.

It is assumed that the manufacturers in Ontario and Quebec require this tariff protection or their industry cannot exist. The tariff is a bounty or subsidy and the cost of it is paid by the consumer of the manufactured product.

The national policy was established for the purpose of benefiting no particular province but to benefit Canada as a whole.

The fact that manufacturing is largely concentrated in Ontario and Quebec is due to many advantages possessed by them such as cheap water power, large centres of population, proximity to American coal mines etc.

The fact remains, however, that this condition causes the west to suffer a disability brought about by Dominion legislative action at a time when the province of Alberta did not exist. Under confederation there were to be equal rights for all provinces and special grants to none.

Professor Norman McL. Rogers, then economist at Queens University and later Minister of Labor and National Defence, made a complete study of the tariff in Canada and the effect of the incidence of the tariff in the different provinces. (See brief "A Submission on Dominion-Provincial Relations and the Fiscal Disabilities of Nova Scotia within Canadian Federation", Province of Nova Scotia, 1932).

The following table gives the net loss or gain of the different provinces omitting as irrelevant for the purpose of this comparison the figures for Prince Edward Island, Nova Scotia and New Brunswick.

<u>1931 Figures</u>	Benefit from Tariff.	Cost of Tariff.	Net loss or gain.	Loss or gain per capita.
Quebec	\$132,867,447	\$101,171,562	31,695,885	✓ 11.03
Ontario	220,722,484	168,732,723	51,989,761	✓ 15.15
Manitoba	19,910,971	29,185,740	-- 9,274,769	--13.25

	Benefit from Tariff.	Cost of Tariff.	Net loss or gain.	Loss or gain per capita.
Saskatchewan	\$ 3,275,950	\$ 29,228,285	--25,952,335	--28.16
Alberta	8,211,148	27,909,396	--19,698,243	--26.93
British Columbia	22,378,571	37,737,247	--15,358,676	--22.33

It will thus be seen that while Quebec and Ontario make a per capita gain of \$11.03 and \$15.15 respectively, all four western provinces indicate a per capita loss, in the case of Alberta as high as \$26.93.

While these are relative and average figures based on an average duty it is believed that the actual figures would be higher due to the fact that the goods that Alberta purchases from Ontario are highly manufactured goods under heavy protection.

"The Alberta Natural Resources Commission received evidence bearing on this point; for instance, in 1930 the products of Canadian manufacturing industries in Quebec and Ontario were over \$2,700,000,000 or 80 per cent of the whole Canadian output, while the prairie provinces only manufactured \$300,000,000 worth, or 9 per cent; and the market for goods manufactured in Quebec and Ontario is admittedly largely in the Western Provinces. Evidence was also submitted to that Commission indicating in the case of individual firms manufacturing, e.g. agricultural implements, clothing, boots, etc. in the East, how large a proportion of their output was purchased by the Prairie Provinces. The proportion has been suggested to be as high in cases as 60 per cent: it must be borne in mind that the coal mines in the west are themselves heavy purchasers of eastern machinery, explosives and equipment." (p.45 Barlow)

It is evident from the foregoing that the farming and mining industries of Alberta are paying a subsidy in the form of the tariff to Ontario and Quebec amounting to nearly twenty million dollars annually and it is only right that assistance should be granted by the Dominion Government to assist the coal mining industry of Alberta.

SUMMARY

(1) Measured in terms of capital invested, net value of production and the employment it provides the coal industry ranks among the large Canadian industries. The conditions in the industry are therefore clearly a matter of national concern.

(2) Production of coal is largely concentrated in the Provinces of Nova Scotia and Alberta; and the functioning of the economics of these two provinces is materially affected by conditions in the coal industry. Alberta is still predominantly an agricultural province. In the past the income of agriculture has proved highly variable. Faced with these conditions a prosperous and stable coal industry could contribute significantly to the general economic stability of the Province.

(3) The relative size of the coal industry in Alberta is indicated by the fact that, in 1941, both the number of employees and the capital invested in the coal industry exceeded the employment and capital in the five leading manufactures combined.

(4) While the domestic market in Alberta does not absorb any large proportion of the provincial production, many important activities, including domestic heating,

central electric stations, and industries processing raw materials, are either partly or wholly dependent upon an assured and continuous supply of coal.

(5) Coal has been essential to industrial development in Canada. The expanding use of hydro-electric power has reduced dependence on coal as a source of power. However, electrical energy does not yet appear to be a practical substitute for coal for heating purposes; and the importance of coal as a source of liquid fuel will increase greatly as the prospective shortage of such fuels materializes. The problem of coal should be viewed in the perspective of the larger fuel problem.

(6) The national importance of a continuous and assured supply of coal has been recognized. Because of its indisputable contribution for heating purposes many of Canada's most important industries and activities are dependent upon coal; and the railroads must continue to rely largely on this fuel. Stoppage of the coal supply would result in immense hardship, inconvenience and loss. Uncertainty is only relatively less serious.

(7) In view of the fact that the agricultural and mining industries in Alberta are paying a subsidy in the form of tariffs to industries in Ontario and Quebec, amounting to nearly \$20,000,000 annually, it is only right that assistance should be granted by the Dominion Government to assist the coal industry of Alberta.



SECTION I
COAL STANDARDIZATION

It is axiomatic that standardization of a product is essential to good marketing and satisfied customers. In other words, a standardized product will displace an unstandardized product in a competitive market. Nevertheless, standardization has made little progress in the coal industry of Canada. One obvious explanation of this condition is the difficulty of the task; nevertheless it must be admitted that much more progress could and should have been made than has been made.

Many articles can be manufactured to exact specifications; and even such agricultural products as wheat, apples, etc. can be standardized by comparatively simple sampling, and inspection; but even if standards of coal were set up, sampling and inspection to show that shipments were up to standard would prove a difficult and costly task. Two separate sets of standards will be discussed below, standardization by quality and by size; and methods for the establishment and maintenance of these standards will be suggested.

Standardization by Quality. No such standardization has been even attempted in Canada and no clear example of standardization can be cited abroad. Canada, however, can, and has need to pioneer. Many large consumers do draw up specifications for the coal they purchase, and arrange for bonuses or penalties according as to whether delivery is above or below specification. The many small consumers can have no such protection. In 1928 an Alberta Coal Standards Board was set up, to consider the shipment of coal to Ontario. The board, after careful study, recommended certain coals as suitable for shipment but they had no power to do more than recommend, and the Board lapsed after making its report. Other provinces also may have attempted action, but the Alberta Board illustrates the situation; a province can control the industry in its own territory, but cannot control shipments to other provinces. Joint Dominion-Provincial action is required. It might be suggested that any province could control the coal sold in that province; but the shipping province has the greatest incentive to maintain high standards and is in the best position to establish and control them, if given the necessary authority.

Coal is not uniform in quality throughout its substance; pieces of floor, of roof or of partings may be included in the shipment, often firmly attached to the clean coal. The different sized pieces may carry different amounts of impurities, and the fines included in the shipment, or formed in transit, frequently differ notably in quality from that of the larger pieces. Coal also becomes segregated in sizing during loading and shipping. It is therefore hard or impossible to obtain a sample that is certain to be representative of the whole shipment without taking as sample a notable percentage of the whole consignment. This gross sample then requires to be carefully cut down and pulverized, after which analysis is made. In brief, sampling and analysis of individual shipments can only be difficult and costly if it is to be reliable. It can therefore be stated that standardization should be planned to require the minimum of sampling and analysis.

Standardization of Size. This is a simpler matter than standardization of quality. Some progress has already been made in Canada, and in other countries standardization of size is accepted practice.

Specification for coal No. 18-GP-1 1940, of the Canadian Government Purchasing Standards Committee includes certain size specifications for coals purchased by the Government; and the Wartime Prices and Trade Board Administrator's Order No. A-289, July 11, 1942, contains regulations 'Respecting the Grading of Coal Mined in the Province of Alberta'. Surely any purchaser of 'nut' coal, for example, should be entitled to receive the same size of coal, wherever mined and wherever delivered in Canada and no present regulations ensures this.

The greatest handicap to standardization in the past has been the individualism of many operators, but the argument has been advanced that different operators use different types of screens and that it would involve heavy expense if they were required to install a uniform type of screen. Actually this is not necessary; the Research Council of Alberta has shown that equivalents can be determined. Thus for certain coals the product passing through a $1\frac{3}{4}$ " and retained on a $1\frac{1}{8}$ " bar screen will be practically identical in size with coal passing a 3" and retained on a 2" round hole screen. The equivalents vary somewhat with the type of fracture of the coal, and equivalents must be determined for the different fracture types and for all screen types in common use. This will require considerable work but the cost of this will be trivial when measured against the advantage to be gained.

Size standards, with complete tables of accepted equivalents, could be set up for the whole of Canada; and operators could then be allowed ample time to adjust their existing screening plant to the required sizes for the different size grades of coal they proposed to sell. The cost to any operator would not be serious.

One difficulty about size standardization is the fact that the coal always undergoes more or less size degradation between the operator's screens and consumer's bin, and it is hard to place the fault if a delivery is unsatisfactory as to size. Some dealers remove the fines from the coal they sell before delivery to the consumer. This practice might be encouraged by authorizing such coal to be marked as "rescreened by dealer".

Coal for domestic use is greatly preferred when free from dust. This is achieved by spraying the screened coal with oil or dedusting solutions. In competitive markets particularly, provision should be made for an additional grading which might be known as "dedusted".

Elsewhere in this brief it is indicated that it would facilitate the marketing of Alberta coals if storage plants were erected at Toronto, and other large distribution centres, where dealers would go to get loads of coals as required for delivery to their customers. Such storage plants might be used to simplify the maintenance of high standards of quality for Alberta coals. The storage plant would only buy coal from operators who could supply, and who did supply, coal of the required quality.

Coal storage plants would normally be equipped, in addition to loading and unloading facilities, storage bins, weigh scales, etc., with facilities for screening or rescreening coal, for taking, crushing and reducing samples to be sent to an analyst, for the oiling or other dedusting treatment.

It is suggested that the storage plants should be operated by pools of interested coal operators.

SUMMARY

Standardization of coal, by quality and size, should be established under provincial boards with power to act under authority granted by the Dominion Government or by joint action of the Dominion and Provincial Governments as found to be legally necessary.

Size standards would be uniform throughout Canada, but control should be enforced by the provincial boards.

Experiments should be conducted to establish equivalents for different kinds of screens and types of coal fractures. Storage plants, if erected at large distributing centres, could be used to facilitate standardization of both quality and size.



SECTION M
COAL UTILIZATION

The coals of Alberta are geologically young, and might be expected to be of 'low rank', that is to be but slightly metamorphosed from the original peaty deposits. Actually the high pressures involved in the formation of the mountain ranges to the west have resulted in places in a high degree of metamorphism - thus such high rank coals such as semi-anthracite and high grade bituminous coals, etc. are found. In general the rank of the coal is high in the mountains, less in the foothills, and gradually decreases east from the mountain face. All the coals are notably low in sulphur.

The division of the coals of the Province into five groups, each with special qualities related to utilization, is given earlier under 'classification'; and the geographical distribution of the five groups is shown in a map.

Many features of the utilization of coal are common to the whole Canadian coal industry, and in fact, to the world coal industry. Utilization, however, is outlined here as a basis for the following description and explanation of conditions which are peculiar to Alberta or are of particular interest to Alberta.

The utilization of coal may be roughly grouped under five main divisions as follows:

Division 1. The combustible matter of the coal is completely burned with an excess of air. The resultant product is heat and, secondarily, power. Coke or char, from division 4, may be used instead of coal as the raw material.

Division 2. The combustible matter of the coal is completely gasified by partial combustion with a limited amount of air, or of air and steam, or of oxygen and steam. The resultant product is gas, to be used either as a source of heat or power, or as a raw material for the production of more valuable products. Coke or char, from Division 4, may be used instead of coal as the raw material.

Division 3. The combustible matter of the coal is largely or completely liquified - with some gas as a by-product - by treating the coal with hydrogen at high temperature and pressure. The types of products can be varied by selection of coal and by modification of operating conditions.

Division 4. The volatile matter of the coal is vapourized by the application of external heat, in the absence of air - or in a strictly limited supply of air. The primary products obtained are coke (or char), coal tar and oils, a watery product, and gas. Some or all of these may serve as raw materials for the production of heat, power, gas and of a vast number of other products.

Division 5. The coal is extracted with solvents, either inorganic or organic, to obtain products which are themselves valuable or are valuable as raw materials for secondary products.

These five divisions will be considered separately, with special reference to Alberta. One feature, however, is common to at least four divisions; Alberta has large developed or potential resources of water power, of natural gas and of petroleum. The utilization of coal in Alberta has been retarded by the competition of these other resources.

The greatest obstacle to the development of coal mining in Alberta,

however, has been the distance of the coal fields from the large market in central Canada.

Division 1. Complete combustion for production of heat or power.

All five groups of Alberta coals are so utilized. Certain difficulties hinder or limit their wider use. Thus the fines of Group I, being non-coking, may be lost through the grates or up the smoke stack of industrial furnaces. Briquetting is employed to overcome this difficulty. Group II coals may require washing to reduce the weight of inert matter to be shipped, and to permit sale in a competitive market. Their coking character, and smokiness render them unsuited for use in most of the domestic heaters in present use.

Groups III, IV and V have lower heat values, which limits the distance to which they can be shipped; but the free-burning, smokeless character of Group IV makes it a good domestic fuel. It is not a good storage coal, however, the ash tends to clinker, characteristics which hinder its sale. Group V coal is mainly sold for local markets.

Custom briquetting and washing plants, suitably placed, are worth consideration. These could be larger and more efficiently operated than plants at individual collieries. The use of blended coals for briquettes, resulting in reduced binder and improved firing qualities, would be facilitated; and the erection of a steam power adjacent to a washing plant would permit the economic production of a cleaner coal.

Division 2. Complete gasification of coal.

Any coal in Alberta could be used to make either a low heat value producer gas or a high heat value water gas. However, for many purposes, particularly where a tar-free gas is required, it is customary to use coke or char instead of raw coal as the fuel.

At present little if any Alberta coal is used for gas making, but there is a large potential market in the near future. Gas is now used for the manufacture of such widely different products as methyl alcohol, ammonia and gasoline, and the number of such products is certain to increase. At present a gas made from natural gas is frequently employed - as for example in the Alberta Nitrogen Products plant in Calgary - but coal may capture the market. The supply of natural gas in any field is limited, and even now industry would hesitate to erect any plant based on natural gas, and involving high capital expenditure, unless there were an assured supply of coal available to replace the natural gas when needed.

It is possible, however, that even in the immediate future gas suitable for synthetic processes may be made more cheaply from coal - directly or indirectly - than from natural gas. Processes have been devised, but it is certain that they can be improved and adapted to Alberta coals. Large scale experimentation is urgently needed. This should certainly be carried out in Alberta before there is shortage of natural gas; and before interests, competitive with coal, can obtain control, through patents or otherwise, of the production of synthetic gas - commonly called water gas. Alberta has coals of many varieties, it is probable that by suitable selection of coal and process a cheaper gas may be made than could be made where the process must be suited to a

particular coal.

Division 3. Hydrogenation of coal.

A comparison of the ultimate chemical analyses of coal and of petroleum reveals that the most notable difference is the higher hydrogen content of the petroleum. It may also be noted that if hydrogen were added to a low rank coal, with elimination of the contained oxygen as water, its chemical analysis might become that of a high rank coal. It is therefore natural to find that coal can be converted into a liquid product by treating it with hydrogen at high temperatures and pressures in the presence of a suitable catalyst. It is also natural to find that low rank coals, by a partial hydrogenation involving lower temperatures and pressures, can be converted into a high rank coal with coking character.

Any Alberta coal can be hydrogenated, but high rank coals are only treated with difficulty, and give poor yield. The low rank, high oxygen content coals on the contrary are easily treated, but involve a high hydrogen consumption. The usual practice elsewhere for the manufacture of gasoline is to treat the coals of Group II and it may be assumed that in Alberta the same coals would be preferred. It is usual to select a coal that may, by suitable cleaning, be reduced to a very low ash percentage.

The degree of hydrogenation may, as suggested above, be varied to give different products. Early plants in Germany and England made gasoline as their main product, and such plants can only operate economically on a large scale and involve very high capital expenditure. A modern trend is towards a lesser degree of hydrogenation, with lower capital and operating expense, to give a cheap bunker fuel oil, or to give phenols, tar acids, etc. for use in the manufacture of plastics. Somewhat lower rank coals might then be treated.

It is anticipated that only the latter type of plant has economic possibilities in the near future in Alberta. Large scale experimentation, such as only the Dominion Government could finance, is required, and it obviously would be desirable that such a plant should be erected in Alberta where the widest range of coals for test is available, and where a cheap gas for the manufacture of hydrogen is also available.

Division 4. Carbonization.

Carbonization is commonly classed as high temperature or as low temperature; but an intermediate temperature is sometimes recognized as a separate class. Carbonization may be undertaken with the manufacture of coke as its prime object, and the gas, tar, etc. regarded as by-products, or the gas may be the prime object, with coke included with the by-products. Some carbonization plants are operated with, and others without, recovery of by-products. Thousands of carbonization processes, retorts, etc. have been devised, and many of these have been developed to successful commercial operation. High temperature carbonization has for many years been a large scale, well established industry; but low temperature carbonization has had a chequered career and is still only operated in a few places and on a comparatively small scale. Nevertheless, for Alberta coal, in the near future, low temperature carbonization appears to have greater possibilities.

Alberta now has some beehive coke ovens - high temperature, without

by-product recovery - and a small market for coke and gas manufacture outside the province.

High temperature coke ovens, with by-product recovery, are operated at a profit in many parts of the world, and produce coke, gas tar, ammonia liquor, etc. The relative amounts of these different products can be varied, by change of conditions, but only within limits. In general, good markets must be available for all of each of the products, and a plant of this character in Alberta would face many handicaps. There is no large market in the Province for Metallurgical coke, and a domestic coke would face competition with the many smokeless domestic coals mined. The gas would face competition with cheap natural gas that has a notably higher heat value. The tar, as a fuel, would face competition with natural petroleum, and there is no suitable market, or marketing conditions, to permit the establishment of a coal tar industry, and the ammonia would face competition with a cheap synthetic product made from natural gas and air.

Although, as stated above, it would be difficult to start a by-product carbonization industry in Alberta under present conditions, there is no reason why Alberta should not supply coal to the plants already established, or to be established, in Winnipeg and elsewhere to make gas and coke for the domestic market. Some positive action may have to be taken, however, to overcome the plant operators preference for the American coals they have been accustomed to use.

To hold this carbonization market for Alberta the coal operators must be prepared to supply a special low-ash coal. Also, as frequently two coals can be blended to give a better coke than that from either coal coked alone, large scale experiments should be made to study the blending possibilities, for carbonization, of different Alberta coals.

The by-products of low temperature carbonization are less well known, and in general have less value, than those of high temperature carbonization. It is reasonable to expect that research will develop their value; but an industry can not be established upon expectations. Low temperature carbonization of coking coals involves many technical difficulties; but there does seem to be good possibility for cheap carbonization processes, without by-product recovery, taking advantage of the non-coking character of Group III, IV or V Alberta coals.

The product will be a char, not a coke; a product bearing much the same relation to the original coal that charcoal does to wood. This char is small in size, light, and not very strong, but it has a notably higher heat value than the original coal and is a clean, smokeless fuel.

There are several potential markets for the char. It may be used for automatic domestic stokers, or blowers; it may be used instead of charcoal as a fuel for portable gas producers on motor vehicles, it may prove a good fuel for the manufacture of water gas, or it can be briquetted as a domestic fuel. In the ordinary methods of briquetting the added binder converts the smokeless char into a slightly smoky briquette; but secondary treatments are now being investigated to give a smokeless product.

The Research Council of Alberta is now investigating methods and processes along the lines indicated. One requisite for reaching distant markets with the fuel will be a ruling that it shall be shipped at the same freight rate as coal. One difficulty that can be overcome is to adapt the use of the fuel to the

clinkering tendency of its ash.

Division 5. Solvent extraction of coal.

It has long been known that most coals are partially soluble in certain solvents, both organic and inorganic. The degree of solubility varies widely both with the coal and with the solvent. Recently, however, many investigations have commenced looking to the possibilities of solvent extraction to give products of value as raw materials in the numerous new chemical industries which are being started. Another recent development is the use of solvent extraction in the preliminary stages of the hydrogenation of coal.

Some years ago the Research Council of Alberta made some preliminary determinations of the solubility of typical Alberta coals in organic solvents. Some of those tested showed reasonably high solubilities. Other tests on the solubility of Alberta coals in caustic alkali showed that some of the coals of Group IV and V were notably soluble. Further tests with Alberta coals are undoubtedly needed, particularly with Group IV and V coals which do not seem to be the type of coals studied elsewhere. There are reasonable possibilities that intensive work on solvent extraction might lead to the establishment of chemical industries in Alberta.



SECTION N
COAL RESEARCH

COAL RESEARCH

Research investigations for the betterment of the Canadian coal industry should be designed to give the most economical utilization of the nation's fuel reserves. They should be planned as a long term policy and should be undertaken jointly by the Dominion and the Provincial governments under guidance of liaison committees. Three liaison committees, at least, would be required - one for mining and geological problems, one for scientific and technical problems and one for economic and marketing problems. The coal operators, coal consumers, industrial organization and manufacturers of coal-mining and coal-burning equipment should be organized and take an active part in sponsoring the research investigations.

The investigations should be divided - the Dominion handling, in general, those which have country-wide significance; the Provinces doing work that has specific application to its own coals, and the Industry, working cooperatively, specializing on mining problems and on work leading directly to technological developments. Although certain matters such as health and safety of miners are definitely a Provincial responsibility, it does not necessarily follow that the research work thereon might not better be undertaken by the Dominion, as many of the problems apply equally to all the Provinces.

The research work should include pure and applied research, and also economic research on the commercial feasibility of various projects. Most problems can be handled on a laboratory scale, but some are of such a nature that they can only be solved in large scale operations. Investigations such as coal cleaning, hydrogenation, carbonization, etc. which require heavy and expensive commercial equipment should be done by the Dominion. Coal operators and machinery manufacturers could work in co-operation with government engineers in some important problems which could not otherwise be undertaken because of excessive cost.

Some of the problems calling for research are listed below under separate headings. Although in some cases it is clear that particular problems are Provincial or even more local in character, the final decision as to allocation, to Dominion, Provincial or Industrial effort, should be left to the liaison committees recommended above.

Coal Reserves.

The aim in investigations on mining should be the development of improved methods, both for underground and stripping operations, in order to improve output, minimize costs and increase safety. These investigations must largely be done in actual operations and in co-operation with mine owners and equipment manufacturers.

Chemical and Physical Studies of Coal.

Because of the complexity of coal, studies of its physical characteristics and chemical constitution are becoming of increased importance in order that pertinent information be made available for the newer developments in coal combustion and coal processing. These studies include: methods for collecting representative samples from mines and from commercial shipments; methods of analysis; physical tests of hardness, grindability, pulverizability, density, bulk weight, storage; determinations of the sizings of coal suitable for combustion under different conditions; ignitability and reactivity of coal and coal products; the nature of volatile matter; ash - its fusion and slagging characteristics; loss of combustible - through grates, as fly-ash and as smoke or soot; solubility of coal in organic or other solvents; and many other similar

studies fundamental to the most efficient utilization of coal and leading to the establishment of new chemical industries.

Most of the above are laboratory scale investigations and are now being studied by the Research Council of Alberta, the Bureau of Mines, Ottawa, or by industrial organizations, but this work should be greatly increased.

Preparation.

Research should be undertaken looking to preparation for the market, of coal of uniform size and quality at a reasonable cost and with the least loss of combustible matter. Such investigations should include studies of coal breakage; mechanism of separating coal from its impurities; cleaning and processing of the finer sizes of coal; methods for dedusting coal; standardization of sizes for different grades of coal and standardization of quality grades; comparison of sizing attained by different methods of screening and efficiency testing of existing coal cleaning plants.

Most of these problems are large scale and would require to be done by the Dominion government or done in co-operation with mine owners.

Storage of Coal.

Coal in storage undergoes deterioration and is liable to spontaneous combustion, yet it is necessary to stockpile large quantities of coal.

Investigation in this field should include the storage qualities of various coals; method for safe stock-piling of coal and fundamental studies of the mechanism of oxidation of coal.

Combustion of Coal.

Since the major part of coal consumed is burned in the raw state to produce heat and power a knowledge of the fundamental reactions upon which combustion depends is important. Equipment should be developed for the efficient and smokeless combustion of different coals. This equipment should include furnaces, automatic stokers, power equipment and railway locomotives, etc. The burning characteristics of different ranks of coal are very different and it is imperative that the equipment be designed for the particular rank of coal if it is to give efficient performance and satisfaction. Efficiency tests of thermostatic and manual controls should also be made under operating conditions. Many problems connected with pulverized coal firing require solution.

Processing of Coal

The processing of coal is becoming increasingly important to the coal industry and is a fertile field for research. Researches should include investigations in high, medium and low temperature carbonization of coking coals; low temperature carbonization for non-coking coals; briquetting of coal with or without binder; gasification of coal, coke or char; production of liquid fuels from coal by hydrogenation or synthesis; production of plastics and chemicals; etc. Some of these are discussed in greater detail in the section on the utilization of coal. Aggressive research along the above lines may help coal to gain or regain coal markets.

Research Information

The formation of a research information bureau is recommended for coordination of the results of research from different laboratories and for the compilation and condensation of all data pertaining to subjects of interest to the coal industry.

The researches mentioned are collected here in little more than skeleton form but many of the more important ones are discussed in other portions of this brief. A more detailed explanation of the researches which should be prosecuted more intensively are given in a paper "Research and the Coal Industry in Canada" by W.A. Lang, presented to the Canadian Institute of Mining and Metallurgy, April 1945. A copy will be attached hereto.

Organization of Research

Coal research in Canada has heretofore been largely confined to work in Dominion, Provincial and University Laboratories. It is now urged that the time has come for the industry itself to organize cooperative investigations. Such work would normally be of a more technical character and on a larger scale than the work in the above laboratories.

An ideal arrangement would be that young scientists trained in fundamental research in Dominion and Provincial laboratories should then move on to the research organizations of the industry, and the men thus further trained could erect and supervise pilot plants and large scale installations, ultimately to take their place among the leaders of the industry.

It is urged, that in recognition of the backward state of technological research in the Canadian coal industry and the amount of work to be done, the coal industry for a term of years should set aside a percentage of its income to be devoted to its own cooperative investigations.

Elsewhere in this brief is a recommendation for the formation of a representative Coal Board or Coal Council. The three liaison committees referred to above could be established by and report to the Coal Board or Council. This organization would not only safeguard against wasteful duplication of effort but would help to insure the maximum profit to the industry of the researches undertaken.

In conclusion, it is urged that the organization for extended coal research should be undertaken at an early date and that some of the more important researches not now in progress be started as soon as possible.

SUMMARY

Great benefits could accrue if coal operators, consumers and industrial organizations and manufacturers were to take an active part in supporting research pertaining to coal mining and coal-burning equipment.

Three research liaison committees, at least, should be formed to initiate and advise on research; one for mining and geological problems, one for scientific and technical problems and the third for economic and marketing problems. These committees could be established by and report to a central coal body the institution of which is considered elsewhere in this brief.

The three research committees could allocate specific researches to various research organizations throughout the Dominion as advisable according to the character of the problem to be solved.

ALBERTA



COAL

SECTION O

PROVINCIAL AIDS TO THE COAL INDUSTRY

PROVINCIAL AIDS TO THE COAL INDUSTRY

The Province of Alberta approaches the Royal Commission on Coal with a number of suggestions, recommendations and pleas. The claims of the Province will surely be strengthened if it is made clear that in the past the Province has not been backward in helping the industry, and that the present requests are principally for actions that could only be taken, or that could far better be taken, by the Dominion or by all the Provinces and the Dominion.

The following brief account, far from complete, of work done in Alberta, by Alberta, for the coal industry of Alberta justifies a claim for the Province of preeminence in self-help for its coal industry.

The items that follow are grouped under miscellaneous governmental activities, the work of the Provincial Mines Branch, and the work of the Research Council of Alberta. The latter body has, throughout its 25 years, regarded work on coal as one of its principal duties.

Miscellaneous Governmental Activities.

The Provincial Government has required, and received, since 1904 Annual Reports of the Mines Branch. These have maintained a high standard of excellency, and form a good running history of coal mining in the Province.

The Workmen's Compensation Act, passed in April 1918, has done much to alleviate the consequences of sickness and accidents amongst coal miners and therefore to increase the amenities of life in an industry which requires special attention in this direction.

In 1919, a Provincial Coal Mining Industry Commission was set up under the chairmanship of Mr. John T. Stirling, Chief Inspector of Mines. They completed their investigation and submitted a report with twelve recommendations in December of the same year.

In 1925 an Alberta Coal Commission was appointed with Mr. H.M.E. Evans as Chairman. This commission submitted a voluminous report of almost 400 pages the following year, with some sixteen recommendations.

In 1928 the Alberta Coal Standards Board was appointed, with Mr. R.J. Dinning as Chairman, to consider the shipment of coal to Ontario. After thorough study of the question certain coals were recommended as suitable for shipment; but the Board could go no further.

In 1935 a Royal Commission Respecting the Coal Industry of the Province of Alberta was appointed, with the Rt. Hon. Sir Montague Barlow as commissioner. His report of one hundred pages the following year contained fifteen recommendations.

It is safe to say that if the recommendations of the above Commissions had been implemented, the coal industry of the Province would be in a much better condition to-day. It is pertinent to remark that legislation normally follows public opinion; and that the recommendations of a Commission are likely to prove futile unless by education and by forceful presentation they so carry public opinion that implementing legislation is bound to follow.

In 1920 the Province established a coal sales publicity office, with combustion demonstrations, in Winnipeg. This was continued till the Depression, when it was decided that it had outlived its usefulness. Some 20 combustion leaflets, under the general title of "Coal Truths" were published. Later a Trade Commissioner and Asst. Trade Commissioner were established in Ottawa and Toronto respectively; and promotion of coal sales forms a notable part of their duties.

The Service of the Provincial Mines Branch in the Operation of the Mines Act and Regulations.

During the years coal mining has been carried on in Alberta, the Mines Act and Regulations have kept well in step with the safety requirements, and today it can be

looked upon as an outstanding contribution to mine safety.

Inspection Districts have been created and the mines in these districts are under the jurisdiction of District Inspectors of Mines with headquarters at Edmonton, Edson, Calgary, Drumheller, Lethbridge and Blairmore. There is also an Electrical Inspector of Mines with headquarters at Edmonton, who covers all electrified mines in the Province.

All Inspectors are technically qualified, and must be holders of at least first class, mine managers' certificates, with the exception of the Electrical Inspector who is otherwise qualified. Together with the technical qualifications, these officials must have had practical experience in the field.

The District Inspectors carry on the work of inspecting the mines in their respective areas, continually, in the interests of safety and efficiency, and report the results of each inspection to the office of the Chief Inspector of Mines, where such reports are analysed in the light of safety practice and procedure, and are dealt with accordingly.

The inspections deal with the following matters:

Shafts; slopes and tunnels; underground roadways; mine outlets; methods of work; ventilation; gases; inflammable dusts; electricity in all its forms; steam and compressed air equipment; hoisting and haulage apparatus; coal-cutting and loading machinery; care and use of explosive; shot-firing; roof and side control of working places and roadways; timbering and mine supports generally; health conditions and such matters, as they affect underground workmen; duties assigned to certified officials and workmen; and inspection of surface equipment and related matters.

In addition to the above, the Inspectors act as presiding examiners at examinations held under The Mines Act; inquire into the cause of all fatal and serious accidents; attend inquests and court cases; and other matters incidental to their duties.

The Mines Act also deals with matters regarding the age at which persons may be employed in and around mines, and the fitness of such persons, by medical certificates.

There is also an Act wherein provision is made for the payment of wages to workers in the mining industry and certain other industries. This Act is known as "The Industrial Wages Security Act". These are all functions of the Government.

The industry itself has done a great deal in the matter of mechanization. As the larger producing mines in the Province move further and further in from the portal, costs of haulage and related matters increase, and this has necessitated the installation of more and more electrical and compressed air equipment, with a view to keeping costs within reasonable bounds.

In the bituminous fields, on account of the thickness of the seams, heavy pitch, gas and dust conditions, very little new electrical equipment has been introduced into the mines, although in the matter of surface cleaning plants, drying and briquetting installations, a great deal has been installed.

In the case of the larger mines operating in the domestic area however, a great deal of new electro-mechanical equipment has been introduced, such as coal-cutting, loading, haulage, fan and pump machinery.

In view of the increased use of electrical machinery in and around these domestic mines, the Government appointed an Electrical Inspector of Mines, whose duty it is to inspect and report as to the condition of all new installations, and as to the maintenance of existing plants.

This phase of Government service, is of great importance to the industry, both as to safety and efficiency of installation, and the workmen concerned with these operations.

The trend towards electro-mechanization is clearly shown over the past few years, if we consider purchased electrical power from 1938 to December 31st, 1944, had increased by 14,737,464 K.W.H.

In 1939 legislation was enacted making it compulsory for mine electricians to be the holders of mine electricians' certificates (granted after examination under The Mines Act) before they can take charge of electrical installations in and around mines. The certificates of such men has already proved of great value, inasmuch as a higher standard of work is being done both in maintenance of existing equipment, and in the installation of new equipment, thereby decreasing the hazards arising from the use of electricity.

At the present time there is a shortage of trained electrical technicians in the Province, and this field offers an exceptionally bright future for young men who will apply themselves and gain the necessary technical and practical training required for this type of work.

Activities of the Research Council of Alberta

Geological Investigations. Two specific reports on coal fields have been published and a third is in preparation; but in addition many other separate and annual reports and maps give geological information on coal areas and seams.

Survey of the Coals Mined in the Province. Jointly by the Mines Branch and the R.C.A. Many thousands of samples have been taken, from some 450 coal mines in the Province, by the Mines Inspectors, and these have been analysed and subjected to many special tests by the Research Council of Alberta. The results form the basis of Report 35, Coals of Alberta, published by the Council in 1944. Special items which might be mentioned are: methods of analysis and evaluation, moisture and mineral matter, micro-spores, ignition temperature and solubility of coal and the fusibility of coal ash. Also studies of combustion characters of coal.

Coal Preparation and Allied Investigations - This work includes studies of coal sizing and distribution of ash through the sizes, screen equivalents, washability tests, briquetting tests, and determinations of friability, storability, oxidizability, etc.

Coal Classification - The Research Council staff took a prominent part in the work leading up to the preparation of the American Society for Testing Materials Classification of coal, and to its adoption in Canada.

Coal Processing and Utilization Investigations - These include combustion tests in industrial and domestic furnaces, and in automatic domestic stokers, carbonization tests, hydrogenation of coal, and smithy tests with coal.

ALBERTA



COAL

SECTION P

AN ORGANIZATION PLAN FOR THE CANADIAN
COAL INDUSTRY

AN ORGANIZATION PLAN FOR THE CANADIAN COAL INDUSTRY

Mr. Robert Foot, chairman of the Mining Association of Great Britain, in January 1945, after a careful study of the coal industry in Great Britain, issued a report to the coal owners suggesting certain undertakings to reorganize the industry. This report is an excellent discussion of the problems of the industry and suggests moves in the direction of their solution. As the problem is much the same in Canada, the report is commended to the study of your Commission and, meanwhile, the following digest is presented for your consideration.

The Problem: The problem is stated as that of giving to the miner continuous employment at a good rate of wages and to capital a return allowing a proper margin for amortisation, depreciation, development and reasonable profit; while at the same time supplying the needs of consumers at economic prices.

To accomplish this there is required: from the miner, good and continuous work with a liberal approach to cost-reducing processes; from the management, enterprise, efficiency, and adaptability to all modern methods; and from the consumer, an understanding of the industry's problems, and sufficient patience to give the miner and the owner their chance to make their respective but mutual contributions.

The objective of Mr. Foot's plan may be summarized as follows:-

(1) There can be no other broad basis for the organization and policy of the coal industry than that of national service (and this fundamental principle underlies all the subsequent proposals). But for an industry so to regard its responsibilities and so arrange its affairs, is not a negation of private enterprise, nor an admission that private citizens agreeing together of their own free will, will not discharge their responsibilities more effectively and with greater enterprise and efficiency, and with more certainty than any state-imposed organization.

(2) Colliery owners, big and small, should for all purposes accept a joint responsibility for the efficient management of the industry in the interests of the nation; and can only discharge that responsibility if, as far as main principles and policies are concerned, they take a national and not a local or sectional view, and are prepared to accept and faithfully to carry out all decisions that may be designed to that end.

(3) The colliery owners must accept their responsibilities in a sense of trusteeship for the nation, and must not only establish the main principles under which this trusteeship is to be carried out, but must also so organise the industry as to carry for all time an inherent promise - and indeed guarantee - that these principles will be held fast, and faithfully put into practice wherever coal is mined in this country now or in the future.

Many excellent suggestions in Mr. Foot's report could be applied to the coal industry in Canada. Among these are:-

(a) That the workers in the industry should be ensured of a wage and a stability, continuity of employment, and general conditions as will give them a good standard of living throughout their working life; and that, as a principle, the earnings of those underground should be maintained at a level in each district that will give them their pride of place amongst industrial workers."

(b) That there should be a reasonable return on the capital employed in the industry, after allowing at all times of a proper appropriation to be made for amortisation, for depreciation of plant, and for development.

(c) That the workers in the industry be kept fully informed of its progress and conditions and be given every opportunity and encouragement to make their full contribution towards its greater prosperity.

(d) That the best modern principles of labour administration and management be applied throughout the industry.

(e) That the best practice be applied by every colliery undertaking with regard to the safety of all its underground and surface arrangements, with the purpose of moving always in the direction of greater safety of the mine itself and of education and training of the workers in safety-first precautions, with close arrangements in every colliery between management and workmen to ensure that this important matter is kept, by joint discussion and co-operation, continually under review.

(f) That every support, encouragement and financial backing be given to research conducted by the industry itself or by outside bodies.

(g) That proper arrangements everywhere for the recruitment of new entrants to the industry and for their subsequent education and training, and for the further training and education of those already employed in it, be established throughout the industry and maintained permanently.

(h) That there should be built in collaboration with the distributors, a technical organization designed to give the best technical advice to consumers to enable them to purchase the most suitable kinds of coal and to use it in the most efficient and economical way.

(i) That the coal of the country should be mined in accordance with the best mining practices with due regard to (1) adequate supplies at a proper price, (2) the conservation of our coal resources, (3) safety.

We are in agreement with the spirit of Mr. Foots' suggestions and urge that, where applicable, they might be adapted to the situation in Canada.

Over and above the problems of the coal mining industry as such and as dealt with by Mr. Foot in describing the industry in Great Britain, and in similar surveys, we have in Canada, an over-shadowing and permanent problem.

The problem arises out of the geographic location of our great coal deposits in relation to major markets in Canada, and the fact that Canada has not, as yet, developed a national coal policy whereby these great natural resources may effectively be developed to support and strengthen the economic position of Canada and the general welfare of our people, and steadily used to provide work for Canadian citizens.

Elsewhere in this brief we have described the freight rate position and disadvantages experienced by Alberta coal in respect to markets. British Columbia and Nova Scotia coals are in a like position. We have also endeavored to show the present comparative economic importance of coal in the provincial and Dominion field.

No attempt has been made to summarize statistically the benefits which would flow from an integrated Canadian policy of completely supplying the Canadian market with Canadian coal. Your commission has been shown, however, the large extent of the market now being supplied with American coal at a present cost in round figures of about \$80,000,000 per year. Contrasted with this, we have partially idle mines and miners and unlimited coal resources of approved quality sufficient to serve all of Canada's fuel and heating needs as far as economically feasible for centuries to come.

SUMMARY.

It is strongly recommended that a national coal policy be adopted having for its primary objective the promotion and establishment of the use of Canadian coal to fill effectively Canada's coal needs; and further that, to effectuate such national coal policy and to develop and extend the same as future circumstances may require, there be established a National Fuel Board to be composed of representatives of the Dominion and provincial governments, the mining industry and the miners.

And further, that the National Fuel Board so constituted, be invested with appropriate powers to accomplish effectively the purposes of the national fuel policy.

ALBERTA



COAL

SECTION R

SUMMARY OF RECOMMENDATIONS

SUMMARY OF RECOMMENDATIONSNational Coal Policy.

It is strongly recommended:

1. That a national coal policy be adopted having for its primary objective the promotion and extension of the use of Canadian coal as far as economically feasible.
2. That, to effectuate such national coal policy and develop and extend the same as future circumstances may require, a continuously functioning National Fuel Board be established and composed of representatives of the Dominion and the provincial governments, the mining industry and the miners. The major function of such board should be to advise the Dominion Government on matters pertaining to subventions, freight rates, fiscal policies etc. and also to co-ordinate the relationships of all phases of the coal industry in Canada and to facilitate their harmonious operation without assuming administration control or interfering in any way with the autonomy of the provinces or their administration of matters pertaining to the coal industry within their respective jurisdictions.

Coal Reserves

3. That a revision of the estimated coal reserves in each of the coal producing provinces in Canada be made by the Dominion Government and based on the present knowledge of the coal deposits which is much more detailed than in 1912.
4. That more extended surveys be carried out in Alberta by the Mines and Geology Branch of the Department of Mines and Resources and that the results of all surveys be made available to the interested governments and to the industry.

Coal Marketing

5. That an effective incentive be presented to the two great railway systems, themselves national in scope, to use Canadian coal more extensively in their own operations.
6. That the federal government institute a continuing campaign of newspaper, periodical, radio and motion picture publicity and other forms of educational effort to stimulate a Canadian demand for Canadian coal.
7. That the federal government be urged to negotiate an American-Canadian reciprocal arrangement whereby Canadian western coal might freely move to western United States points as against similar importations of American coal to mid-Canadian points.

Freight Rates

8. That the Dominion Government take immediate and effective action to establish by statute substantially reduced freight rates for coal with provisions for flexibility to meet emergent or changing conditions.
9. That this Royal Commission make a complete and thorough investigation with the Board of Transport Commissioners and the railways of the present high basic \$8-per-ton freight rate on coal shipments from Alberta to Ontario.
10. That a complete examination of freight handling costs be conducted in respect to present day conditions to determine the possibility of rates more favorable to coal through the use of modern equipment and solid trains.

11. That the federal government establish subventions on a long term basis subject to review every ten years and governed by zones according to mileage rather than by provincial boundaries.

12. That, in view of the fact that the agricultural and mining industries in Alberta are paying large subsidies in the form of tariffs to industries in Ontario and Quebec, it should be regarded as just and right that the federal government assist the coal industry of Alberta.

Standardization

13. That specific grades be established for coal by joint action of the Dominion and Provincial governments.

14. That standardization of quality be controlled by provincial authority under powers established by the Dominion or by joint action of the Dominion and the province as found legally necessary.

15. That standardization of size be uniform throughout Canada but that control be enforced by the provincial authority.

16. That experiments be made to establish equivalents for different kinds of screens and types of coal fractures.

17. That storage plants be erected at large distribution centres and used to facilitate also the standardization of both quality and size.

Utilization of Coal

18. That custom briquetting and coal washing plants be established at suitable places to serve a number of individual collieries.

19. That the Dominion Government be urged to institute large scale experiments covering the following points:

- (a) cheap production of water gas from Alberta coal.
- (b) manufacturing hydrogen with a view to developing a comparatively cheap hydrogenation processes.
- (c) blending different Alberta coals to produce better coke in carbonization plants.
- (d) solvent extraction of Alberta coals, particularly in coals of Group IV and V.

Research

20. That the Bureau of Mines conduct continuous research into all phases of coal mining in Canada with special attention to improved methods of production and increased use of coal.

21. That a branch of the Bureau of Mines be established in Alberta to work in co-operation with the Research Council of Alberta.

22. That research liaison committees be formed to initiate and advise on researches: one committee for mining and geological problems; one for scientific and technical problems; and one for economic and marketing problems, these committees to be formed by and report to the National Fuel Board mentioned previously.

Findings of Commission

23. Few effective beneficial results can accrue from the labor of this Commission and those who have contributed briefs unless the widest possible publicity is given to the findings of your Commission. We therefore recommend that the Dominion Government be urged to retain a competent public speaker for six months after the publication of the Commission's report to address service clubs and industrial, labor and technical organizations across Canada and that full publicity be given to the findings of the Commission through the press and radio.

Conclusion.

The spirit of the intentions of the Government of Alberta has been to bear constantly in mind the ultimate object that when the time comes for our vast coal reserves to yield more fully their blessings to mankind, human ingenuity will have devised ways and means of production which will eliminate completely the burdens of human toil and the dangers to life and limb which are now the lot of those who labor in the pit.

SUPPLEMENTARY INFORMATION

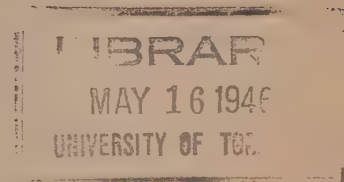
TO THE

ALBERTA BRIEF TO THE

ROYAL COMMISSION

ON THE

COAL INDUSTRY OF CANADA.



ALBERTA COAL

Leases, Royalties and Taxation

Lands patented, sold or disposed of for valuable consideration by the Dominion Government prior to October 31st, 1887, conveyed the surface and all minerals excepting gold and silver.

As early as the year 1883, coal rights were sold outright at prices ranging from \$7.00 to \$10.00 an acre on coal other than anthracite, and for \$20.00 an acre on anthracite, and it was not until February 6th, 1901, that regulations were introduced reserving royalty to the Crown, which became effective on April 6th, 1901.

The practice of selling coal rights continued until May 4th, 1907, but all sales following April 6th, 1901, were subject to royalty which on May 31st, 1901, was established at the rate of 10 cents a ton and later reduced to 7 cents a ton on merchantable coal mined following January 1st, 1915.

The sale of coal rights was discontinued on March 4th, 1907, and from then to the transfer of the natural resources to the Province on October 1st, 1930, coal rights were disposed of by lease at a yearly rental of \$1.00 an acre and royalty of 5 cents a ton.

Under the administration of the Province there is no provision for selling coal rights, and disposal is made by lease for a yearly rental of \$1.00 an acre and a royalty at such rate as may from time to time be prescribed by the Lieutenant Governor in Council, and at present the royalty payable is 5 cents a ton.

During the administration of the natural resources by the Dominion Government, approximately sixteen million acres of coal rights were patented and nearly 99% of such disposal was not subject to the payment of royalty to the Crown, as shown in Table 1.

TABLE 1

VARIOUS GRANTS CONVEYING COAL RIGHTS IN
ALBERTA BY DOMINION GOVERNMENT

<u>NATURE OF GRANT</u>	<u>ACREAGE</u>	
	<u>No Royalty</u>	<u>Subject to Royalty</u>
Subsidies to Railways	13,031,731.00	
Subsidy to Hudson's Bay Company	2,404,000.00	
Coal Lands Sales, Mining Lands Sales and Mineral Sales	46,724.44	189,201.99
Unpatented Mineral Sales		370.40
Patented after September 1, 1905		
Homesteads	3,007.46	
Special Grants	21,165.73	
Right of Way and Station Grounds	44.79	
Pre-emptions	2,190.52	
Small Lands Sales of Various Kinds	5,817.08	
Military Homesteads, Military Bounty Grants and North West Mounted Police Grants	647.00	
School Lands Sales	151.01	
Homesteads, etc., patented before September 1, 1905, approximately	250,000.00	
	<hr/> 15,765,479.03	<hr/> 189,572.39
 TOTAL - 15,955,051.42 acres		

Consequently, there is considerable coal mined in the Province that is not subject to Crown royalty (Table 2). It might be remarked that leases of freehold coal require the operator to pay royalty at varying rates, ranging up to 50 cents a ton.

TABLE 2

Production of Coal for the Year 1943
Showing the Tonnage and Percentage
Subject to Crown Royalty

<u>Fields</u>	<u>Tons Mined</u>	<u>No Royalty</u>	<u>Subject to Royalty</u>	<u>Percentage Subject to Royalty</u>
Bituminous	3,469,993	1,005,427	2,464,566	71.0%
Sub-Bituminous	791,952	12,253	779,699	98.5%
Domestic	3,416,037	1,743,998	1,672,039	48.9%
Totals	7,677,982	2,761,678	4,916,304	64.0%

Revenue from coal is derived from rentals and royalties on coal leases and from royalty on freehold rights granted subject to Crown royalty.

TABLE 3

Statement of Rentals and Royalties Collected by Provincial Government on Coal Mined on Crown Leases and Freehold Rights Subject to Royalty from October 1, 1930 to March 31, 1944.

<u>Fiscal Year</u>	<u>Rentals</u>	<u>Royalties</u>	<u>Total</u>
1930-31 (half year)	\$ 71,329.17	\$110,140.80	\$181,469.97
1931-32	138,203.32	151,524.42	289,727.74
1932-33	131,861.06	148,771.79	280,632.85
1933-34	126,440.91	203,047.95	329,488.86
1934-35	133,793.73	188,487.82	322,281.55
1935-36	123,139.96	206,470.99	329,610.95
1936-37	121,352.61	193,810.33	315,162.94
1937-38	119,808.71	173,386.26	293,194.97
1938-39	111,431.25	152,341.01	263,772.26
1939-40	116,187.52	176,615.53	292,803.05
1940-41	89,637.77	215,886.92	305,524.69
1941-42	84,830.31	239,627.78	324,458.09
1942-43	84,030.37	260,313.62	344,343.99
1943-44	93,360.86	259,323.95	352,684.81
Total	\$1,545,407.55	\$2,679,749.17	\$4,225,156.72

Privately owned coal rights and leases from the Crown were, to the close of 1944, subject to taxation by the Department of Municipal Affairs or municipal districts, as the case may be, but it is not possible to procure the tax collection figures.

The Mineral Taxation Act did not apply to coal until its re-enactment at the 1945 session of the legislature, and the rate of acreage tax for the current year is one cent an acre on freehold minerals but the mill rate upon the assessed value of minerals in producing areas has not been set for the year.

